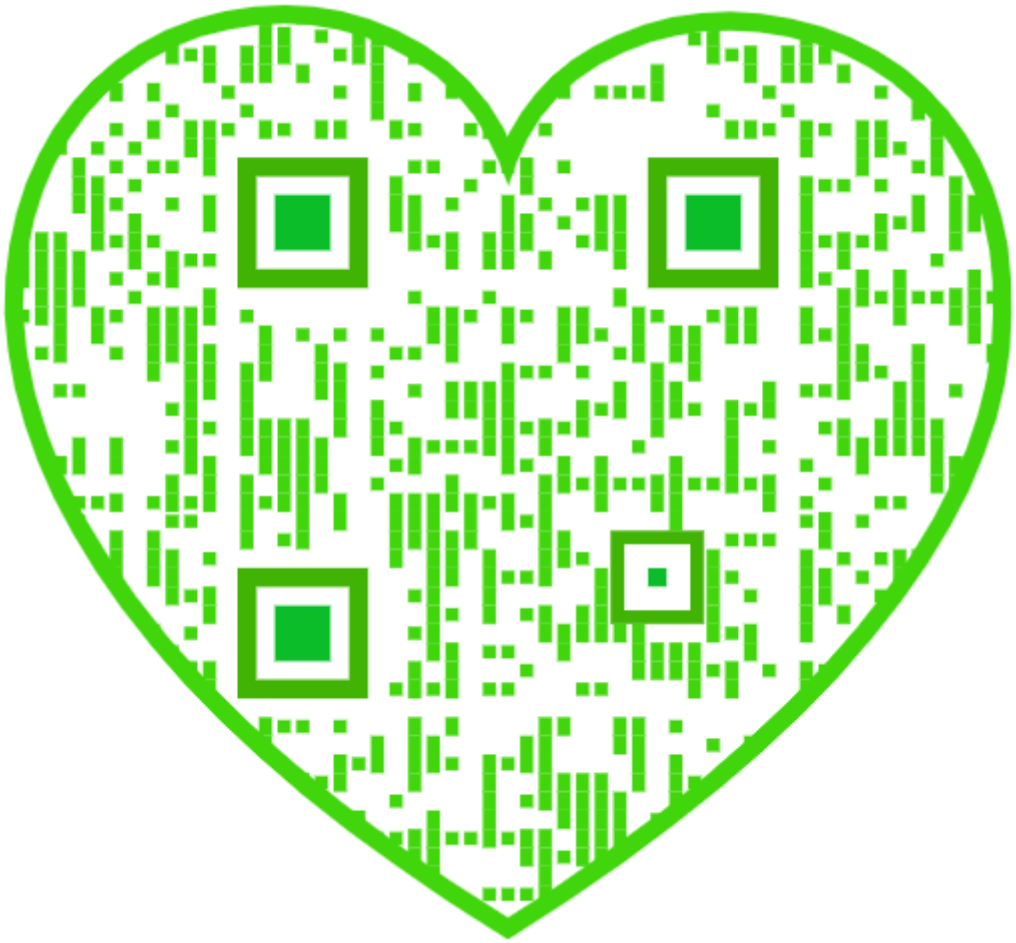
A Village Class
FOR
Drawing and Wood-Carving.

Gertrude Martineau



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A VILLAGE CLASS

FOR

DRAWING AND WOOD CARVING

HINTS TO TEACHERS

BY

GERTRUDE MARTINEAU

LONDON
LONGMANS, GREEN, AND CO.
AND NEW YORK : 15 EAST 16th STREET
1891

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PRINTED BY
SPOTTISWOODE AND CO., NEW-STREET SQUARE
LONDON

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DRAWING AND WOOD-CARVING

DRAWING.

HINTS ON CONDUCTING CLASS.

During a residence of some months in a country parish in Scotland I started, with the help of my sister, an evening class for drawing and wood-carving; and it has occurred to me that a record of what we did might be useful to others willing and able to conduct such a class if they had a hand-book to suggest a plan of work.

The laird kindly gave the use of a room which had been the village school before a new building had been set up by the School Board. Some old tables and forms were borrowed, until, after a year or two, by means of a 'Penny Reading,' sufficient funds were raised to have two excellent steady tables made by a village carpenter.

Private friends, who found the class already started, came forward most willingly with donations to help in the first outlay. The following things were needed for the start :—

Tables or desks.	Small compasses.
Seats.	Pencils.
Blackboard (or 2).	Rulers.
Easel (or 2).	Drawing-books.
Long T square ruler.	India-rubber.
Chalk.	[Set-squares.]
Compasses for blackboard.	Copies for home use.

The intended class having been announced by written placards at the post office and the railway station, and on a few

prominent walls, gates, and trees about the district, and also by the minister in the church, the class began. The attendance began timidly, but soon increased; and though, owing to a sparse and scattered population, it was never large, it was sufficient to show a very strong interest; and the class has continued steadily for four summers. If it could be held in the winter the attendance would be much larger and more regular, as long days and influx of visitors, and the busy farm season, keep the country workers engaged late in the evenings, and often prevent them attending or being regular at a summer class.

The age mentioned for the pupils was over 13, and during the first season this was adhered to; but as the class did not prove to be over-full it was found possible to make exceptions, and a few children were admitted under 13, whose parents expressed a strong wish for them to join.

As it was very desirable that those who wished to learn carving should have some notion of drawing, and as there was no drawing taught in the village, even in the school, the carving was not mentioned till half the season had passed in drawing.

When carving was proposed, it was heartily taken up by several members of the class, and has been very successfully carried on by these ever since, as also by a good many other pupils who began later. The details of the carving arrangements will be found at pp. 98–101.

Simple exercises in Practical Geometry have been found exceedingly useful, as conducing to exactness of eye and hand and neatness of execution, also as helping in the understanding of expressions used in criticising the drawings. Further, they are specially valuable for carvers.

The elementary terms of geometry were explained, and then frequently used, so that they might become familiar.

The figures were constructed on the blackboard, in sight of the pupils, till the modes of construction were somewhat understood; then a geometrical pattern was often put upon the board before the lesson, and the pupils were helped at the lesson to find out how it was made and to copy it. It was

surprising how much they cared about this part of the lesson, and how sharp and bright they were about it. The eyes positively glistened when the pupils were told to take their compasses and rulers.

In taking a walk one Sunday I found, drawn with a stick in the dust of the road, the geometrical problem which had been part of the lesson on the previous Friday evening. When one lad left the neighbourhood to go and learn gardening, his mother told me that the young pupils had given them, for a lesson, to lay out a plan for a garden, and that, owing to the geometry he had learnt in his class at home, amongst the plans 'Sandy's was choosed.'

I cannot speak too strongly of my belief in the value of geometrical drawing, or of the charm it has for such pupils. The neat little instruments, the care they need, the well-sharpened pencils, and the delicacy and neatness needed in the construction of the figures, are quite an education in themselves, and the symmetry of the figures made with them is the best possible training for eye and hand. Give a pupil a geometrical figure to construct, or to copy, and let him find that, for want of skill and perfect exactness, his square is a rhombus, and his hexagon in a circle leaves a bit of space to spare, and it is as if scales had fallen from his eyes, and he is all eagerness to try again. For the carvers, some knowledge of geometry is almost indispensable for the proper setting of their patterns on the wood, even if they do not get beyond this, and learn to plan, design, or adapt their own patterns.

Compasses, rulers, set-squares, &c., were lent round to the pupils who did not possess them, at the lesson; but it is well to encourage them to buy these for themselves, in order that the problems may be practised at home, and thus much more thoroughly mastered. Good compasses (to hold ordinary pencils) can be had for *5d.* a pair at the Educational Supply Association, Holborn Viaduct, London, W.C.; also rulers marked with inches (and these divided into 8ths), price *9d.* per dozen; and set-squares about the same price. (All other materials at the same place.)

In thus strongly advising the use of practical geometry, I

would also call attention to the twenty-four specimen lessons given on pp. 10–57, and show that I would not use it to the exclusion of other drawing, but side by side with it. I have tried in each lesson to give both freehand or object drawing and geometrical drawing.

In every case of symmetrical objects the teacher should insist on the guiding lines being carefully drawn, especially the middle line. It is well for the pupil to draw these by hand, without using the ruler.

The drawings should not be made either very large or very small: in the first case the difficulties are much greater to inexperienced hands, and in the second case the tendency is to cramp the hand and induce niggling. As a rule, two objects should be drawn on one page of the penny books, and the geometrical problems should occupy about the same space.

It is not expected that the whole of any of the specimen lessons should be given in one evening: they afford too much material, as a rule, to be well learnt in one lesson; but are offered as suggestions merely, which, with the supplementary matter which comes after, and a handbook of geometry, &c., may serve as hints from which the teacher may make up lessons suitable to his special class.

The questions, also, are not intended to be exhaustive, but are examples of the way in which to awaken interest, and test understanding, and keep alive memory of former lessons. Such questioning is an invaluable element in the teaching, not only for the direct benefit of the pupil, but also for the teacher; showing him where the lessons have been understood, and where he must supplement or renew them. The pupils were at first extremely shy of speaking, and not even a *whisper* could be got in answer to questions; so that I had to give the answers as well as ask the questions; but, from the first, intelligent interest shone in the attentive faces, and by degrees overcame even the agricultural slowness of speech. A murmured answer at length broke the charm, from the lips of one bolder or more eager than the rest; and a little encouragement, or a little joke, which sent a laugh round

the class, gradually broke down the silence. After that the pupils became eager to answer.

For my own part, I have found it absolutely indispensable, for freedom in conducting each lesson, to be thoroughly well prepared beforehand, and to know by heart every particular of what I am intending to teach. I drew out on a piece of paper, for reference at the time, all the proposed lesson, had the geometry well in my head, and thought out the questions to be asked and remarks to be made. The object or freehand drawings I drew on the board beforehand, so as to be ready for the pupils to start at once on entering the room. I could then go round to each, and correct the home work, whilst all the others began their drawings without loss of time.

Suggestions will also be found for home work, at the foot of each specimen lesson. The pupils were encouraged to copy *from the real objects* such ordinary household utensils, &c., as are found named on the lesson pages. This induces them to examine and take notice of objects around them.

Outline copies were lent for home work, and brought back the following week, and the drawings corrected. Illustrated catalogues of china, ironmongery, &c., serve well for copies, when the illustrations are cut out and mounted on card, where it is necessary to save expense. Old cardboard boxes cut up, or tradesmen's cards, serve well for mounts. Where better copies can be afforded the following are very good and cheap :—

Vere Foster's drawing-books (Marcus Ward and Co., 2*d.* or 3*d.* each).

B, 1, 2. Straight-line objects.
C, 1, 2, 3. Curved-line objects.
D, 1, 2, 3. Leaves and simple flowers.
E, 1, 2, 3. Wild flowers.
O, 1. Domestic animals.
O, 4. British wild animals.

Cassell's penny drawing-books; also standard drawing-books.

Mr. Poynter's South Kensington drawing-books, 6*d.* each, viz.

Elementary freehand ornament. 2 books.
Freehand, first grade. 6 books.
Same on card, 1*s.* each packet. 6 packets.

As a handbook for geometry, Gill's 'Second Grade Practical Geometry' is sufficient (price 6*d.*) A fuller and better handbook for a teacher who wishes to go further (but containing also all the elementary matter) is 'Practical Plane and Solid Geometry,' by John S. Rawle (Simpkin and Marshall), price 1*s.*

The first and most elementary principles of perspective have been introduced into the specimen lessons, in hopes of enabling pupils to understand about converging lines in straight-line objects, and of thus helping them to draw such objects more correctly. But I have found it impossible, in the kind of class which I have had, to go beyond this. Any teacher who can carry his pupils further in this study will be giving them an added power and interest. A useful handbook for such a teacher is Burchett's 'Linear Perspective' (Chapman and Hall), also 'Practical Plane and Solid Geometry,' by J. H. Morris (Longmans).

The geometry problems which have been selected are those which seemed to me most helpful and suggestive. From the geometrical handbooks named above any number more can be taken.

In the home lessons it is probable that the pupils will need many more exercises on all the problems taught, and to have these renewed constantly, in order to keep up their memory of what they have learnt.

As the pupils became able to do more difficult work at home, lessons such as will be found at pp. 61–67 were given to them to work out. The patterns here partly drawn out were given to them, just as they stand in these pages, drawn on a little slip of paper, with the instructions written. With carbon paper I traced as many copies as there were pupils who needed them, so that each pupil had a copy for himself. The carrying out of these patterns to completion was a great interest, and they were surprisingly well done.

Geometrical figures were sometimes given by dictation to the pupils, without anything to look at. This is an excellent test of understanding of terms and modes of construction. It is good also sometimes to give for home work a *written* direction for the construction of a problem or drawing. The pupil becomes much interested in seeing what he is working out for himself.

As the pupils advanced I also found it an excellent plan to give them exercises in 'memory drawing.' A simple pattern, ready drawn upon the board, was turned round and shown to them for two or three minutes, during which time they carefully studied it with a view to reproducing it. The order of construction was explained (generally twice over); the example was then taken away, and reproduced from memory. When the drawing was done, the original was again shown, and the faults explained and commented on. It was amusing to see the smiles of contempt and ridicule which the pupils cast on their own first attempts, when the board with the original drawing was replaced before them. Some examples will be found at pp. 90–92.

At a still more advanced stage, and especially with those who were carving, the arrangement and adaptation of patterns, flowers, &c., to given spaces and shapes was attempted. Some examples of this will be found at pp. 93–97. In this branch also so much progress was made, and such an amount of success achieved, as to give great encouragement to its pursuit. At first the pupils were entirely *blank*, and sat helplessly idle; but when I went to the board, and roughly sketched the shape required, and slightly indicated within it six or eight possible arrangements of the pattern, and left the pupils to choose among them, they seized their pencils and started work at once; and I found, on returning to them, no two alike of what they had chosen, and that some had introduced alterations of their own. Thus the ice was broken in this exercise also, and in two or three lessons they became comparatively independent. For carvers nothing could be more important.

Sprays of leaves, or simple flowers, were sometimes given,

to vary the lesson; but when this is done it is best that each pupil should have one to himself, to avoid difficulties of position. Occasionally I also put before them some object, such as a dish, a basin, a pail, &c.; but there is always a difficulty in placing such objects so as to be equally visible to all the class, and so that some pupils should not get a very difficult view of them. Where it is possible to have *several* objects, this would go far to obviate the objection.

All materials were *sold* to the pupils, at cost price; it was only necessary to lay in a stock, and keep it up.

Drawing-books	were sold at	1*d.*	each.
Pencils	,, ,,	½*d.*	,,
India-rubbers	,, ,,	1*d.*	,,
Rulers	,, ,,	1*d.*	,,
Pair of compasses	,,	5*d.*	,,

These prices covered expenses of carriage of parcels, &c., when the stock needed replenishing, owing to the goods being cheaper in large quantities.

It only remains for me to add that, as to behaviour, there never was need for any comment. All pupils, men and women, boys and girls, were too busy and too much interested to do otherwise than work all the time, and the teachers had never the least trouble or occasion for dissatisfaction; and the intercourse with all was a pure pleasure, from the young farmer who came many miles after a hard day's work to the little girls and boys who were clustering round before the door was opened, and the big lad who waded across the broad burn, and stumped in, bare-legged, for his lesson. Dogs came too, and there was an occasional fight, which did not, however, extend to the other pupils.

As autumn came on we had to have lamps, and we had about eight or ten small cheap ones on the tables, which gave sufficient light and cost but little.

Each pupil paid a fee of 9*d.* for the class for the season, which included about twenty-four lessons.

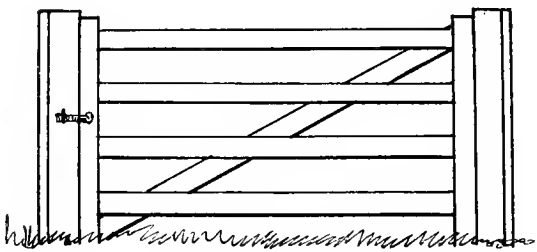
Any teacher who conducts such a class cannot fail to feel that he gains, himself, immeasurably, in various ways; and

it is impossible in that case that he should not also benefit his pupils.

Many of the annexed patterns have been taken or adapted from a little Japanese book, which can be had from Batsford, 52 High Holborn, who has two such books, price (about) 2*s.* 6*d.*; and they are full of suggestion to a teacher and to a carver.

TWENTY-FOUR SPECIMEN LESSONS.

1ST LESSON.

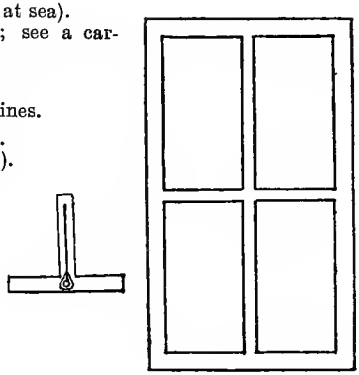


Straight Lines.

Horizontal (from horizon, at sea).
Vertical (vertex, the top; see a carpenter's plummet).
Oblique (slanting).

Needing 2 or more lines.

Perpendicular (to balance).
Parallel (beside each other).



HOME LESSON.

Palings (*any sort*).

IN LESSON 1.

How many Horizontal lines ?

„ Vertical „

„ Oblique „

Which lines are Perpendicular to each other ?

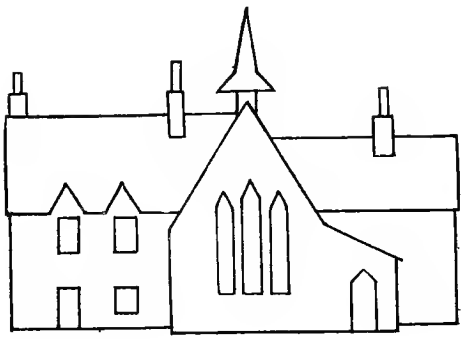
Are there any Horizontal lines in this room ?—Which are they ?

Any Vertical ?—Which ?

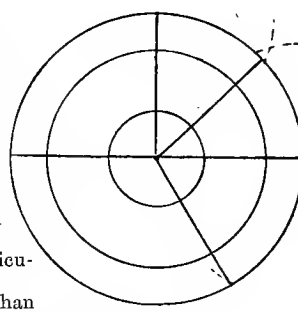
Any Perpendicular ?—Which ?

Tell the pupils to look at all the palings (or railings) as they go home, and to draw some like them for next time.

2ND LESSON.



Circle.



Centre.

Circumference (to carry round).

Diameter (the measure through).

Radius (a rod or staff; the spoke of a wheel).

Degrees: 360° in circumference; 180° in $\frac{1}{2}$ circle (semicircle); 90° in $\frac{1}{4}$ circle; 60° in $\frac{1}{6}$ circle, &c.

Angles at centre; measured on circumference.

Right angle. (See 'Perpendicular, p.' 10.)

Obtuse angle (*blunt*), larger than right angle.

Acute angle (*sharp*), smaller than right angle.

HOME LESSONS.

Cottage. Wheel.

IN LESSON 2.

(Teacher to make a drawing on the board of any School (or other) building in the neighbourhood, so as to interest the pupils.)

Ask questions about horizontal, vertical, perpendicular, and oblique lines in the building represented. Vary the order of questions; e.g.—

'Which lines are Vertical?'

'What is this line?' (pointing to one.)

'How many oblique lines like this are there?' &c.

Each Circle has 1 Centre and 1 Circumference.

Can a Circle have more than 1 Diameter?

How many?

How many Radii?

How many Angles at centre?

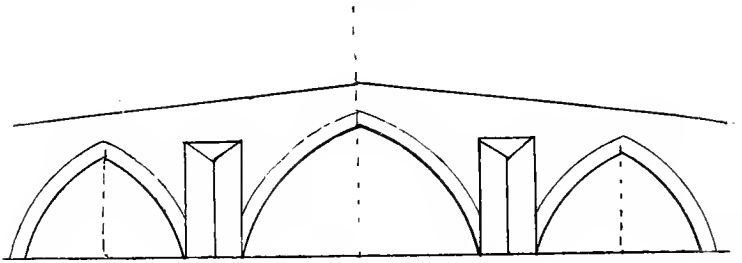
How many Right Angles?

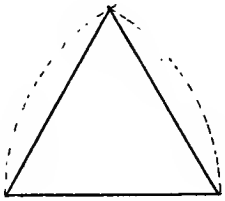
How many lines does it take to make an angle?

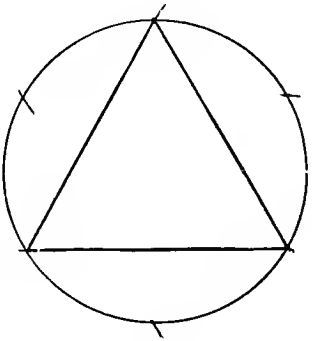
Are there more degrees in the Circumference of a large circle than of a small one?

Where do we measure the size of an angle? (Show, with compasses.)

3RD LESSON.

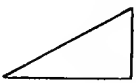






Triangles, or Figures with 3 *Angles.*

Equilateral triangles: all sides equal, and 3 acute angles.



Right-angled triangles: one right angle.

Obtuse-angled triangles: one obtuse angle.

Acute-angled triangles: three acute angles.

Isoskeles triangles (meaning 'equal legs'): two sides equal.

HOME LESSONS.

Window. Envelope.

IN LESSON 3.

Ask questions as to the sort of lines used in Bridge.

What does Tri-angle mean ?

What does Equi-lateral mean ?

,, Acute ,,

,, Obtuse ,,

,, a Right Angle ,,

How many Right Angles can you make at the centre of a circle ?

Is an Obtuse angle larger or smaller than a Right Angle ?

Which has the greatest number of degrees, an Acute angle or an Obtuse angle ?

Does a Right angle contain more or fewer degrees than an Acute angle ?

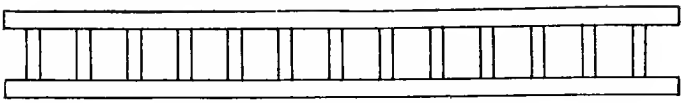
What is a Right-angled Triangle ?

How many Obtuse angles has an Obtuse-angled Triangle ?

Has an Acute-angled Triangle more than one Acute angle ?—How many ?

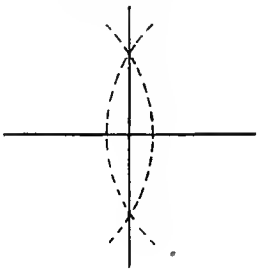
How many Obtuse angles can you make at the centre of a circle ? (Let them try.)

4TH LESSON.

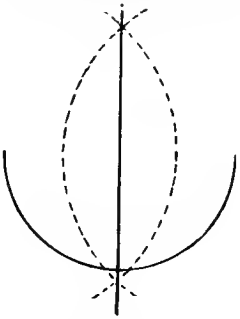


To bisect, or cut into two equal parts.

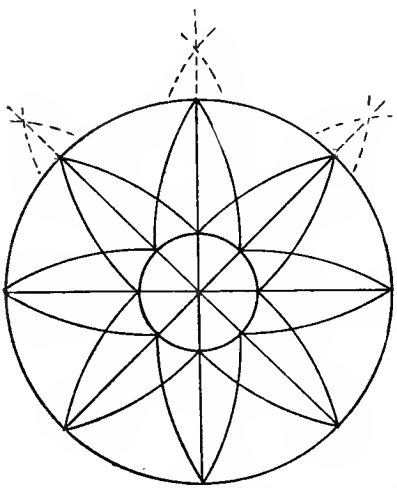
Bisect a line.

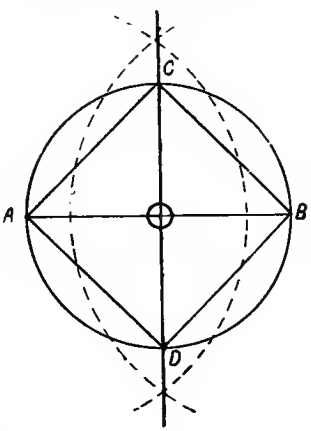


Bisect an arc, *i.e.* a part of a circle's circumference.



Dictate a square in a circle.





HOME LESSONS.

Bottle. Spade. An Obtuse-angled Triangle. An Equilateral Triangle.

IN LESSON 4.

Ask questions about lines and angles in Ladder.

What does Bi-sect mean ?

Can we bisect a part of the Circumference of a circle ? —What is that part called ?

How many circles are there in this pattern ?

How many centres ?

When two or more circles have the same centre they are called *Concentric.*

How many angles at centre of pattern ?

How many degrees in each angle ?

Dictate ; thus :—

Make a horizontal line 2 inches long. Call it A B.

Bisect A B in O.

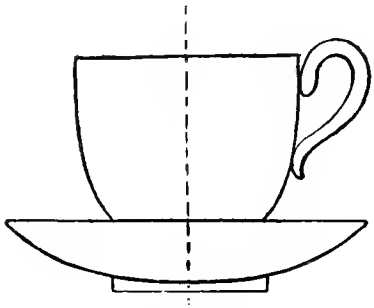
From O make the vertical line 1 inch long above A B and 1 inch below A B, and call the ends C and D.

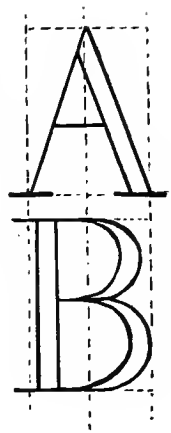
Draw lines to join the 4 points A B C D.

This figure is a square (4 sides equal and 4 angles right angles).

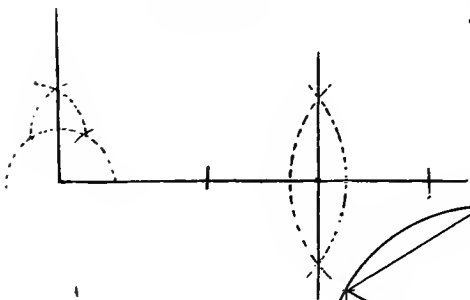
Put your compasses at O : take O A as radius, and make a circle.

5TH LESSON.



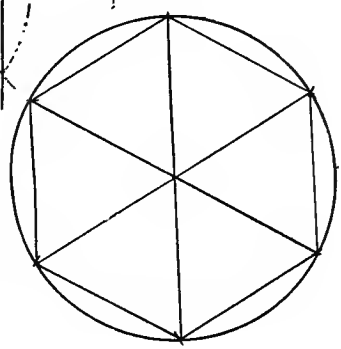


Perpendiculars.



Hexagon.

Figure with 6 equal sides (and 6 equal angles); 6 equilateral triangles. Equilateral triangles have 3 angles of 60° each. The 3 angles of every triangle contain 180°.



HOME LESSONS.

Knife. Cup with handle turned to left. Bisect a line 1 *inch long.*

IN LESSON 5.

What sort of lines are those at the top of the cup, and at the top and bottom of the saucer?

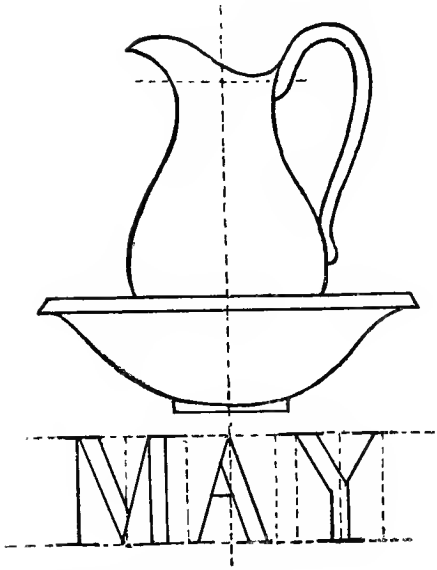
Question about lines and angles in letters.

Make perpendiculars in other positions (downwards, perpendicular to sloping lines, &c.)

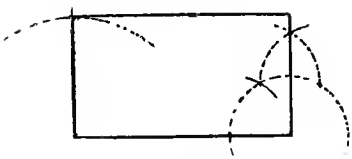
The 3 angles of every triangle contain 180°. How many degrees are there in each angle of the 6 equilateral triangles?

(In this lesson and the next the month in which the lesson is given might be printed as an exercise.)

6TH LESSON.

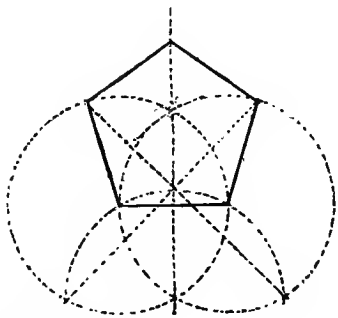


Dictate; Oblong.



Pentagon.

Figure with 5 equal sides (and 5 equal angles).



HOME LESSONS.

Fork. Saucepan. Jam Pot.

A line 2 inches long; a line perpendicular to it at one end, and another in the middle.

IN LESSON 6.

Questions on lines in Jug and Basin, and on lines and angles in Letters and Figures.

How many sides has a Pentagon? How many angles?

What angles has an oblong?

Bisect 2 sides of the Pentagon, so as to find its centre. Divide the Pentagon into 5 equal triangles. How many degrees in each of the 5 angles at the centre? How many degrees in each of the other angles of the 5 triangles?

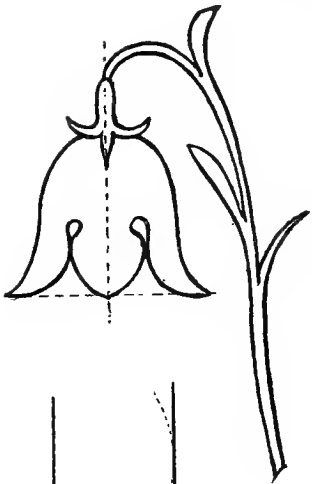
And how many degrees in the angles of the Pentagon?

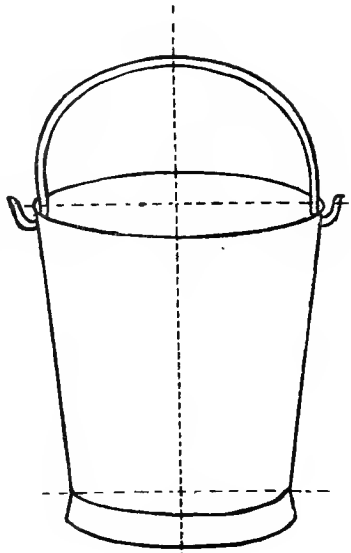
(The date—month and day—might be printed as an exercise.)

Give definition of an oblong.

The use of the set-square might here be taught.

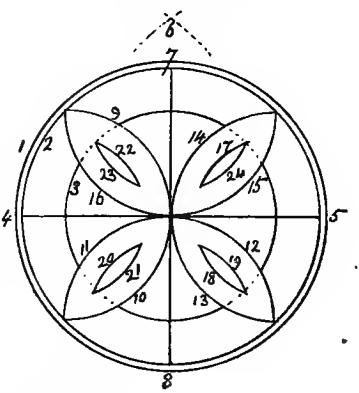
7TH LESSON.





To make parallel lines.

Copy this figure in the order in which it is numbered.



HOME LESSONS.

Spoon. Jug. Candlestick.
An Oblong: sides of 2 *inches and* 1 *inch.*

IN LESSON 7.

Questions on Pail.

How many lines can we make parallel to each other?

Make 6.

What does 'Parallel' mean?

How many circles in this pattern?

What are circles having the same centre called?

How many semicircles in the pattern?

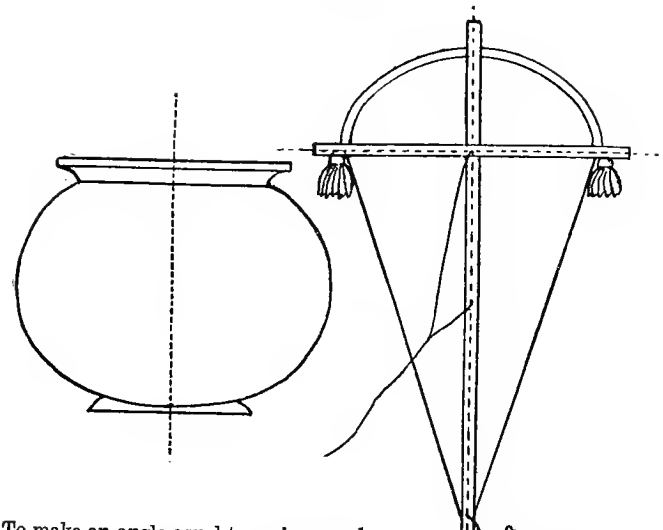
What is the line 4–5 called?

Is there any other line with the same name in this pattern?—Which?

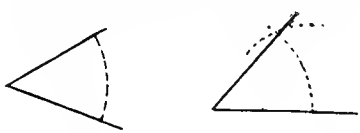
What is the line from the centre to 5 called?

How many radii in this pattern?

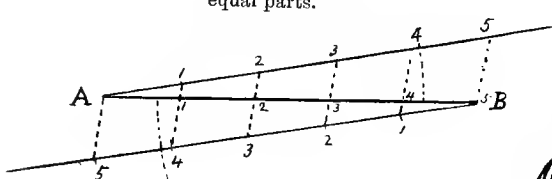
8TH LESSON.



To make an angle equal to a given angle.



To divide a line into any number of equal parts.



HOME LESSONS.

Basin. Bell. Wine glass.

A line 3 inches long; 4 lines parallel to it, 1 inch long, and $\frac{1}{2}$ an inch between the lines.

IN LESSON 8.

Questions on lines, angles, &c., in Bowl and Kite.

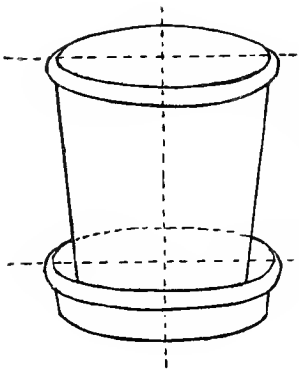
What do we call the part of a circle which lies between the 2 lines forming the angle A?

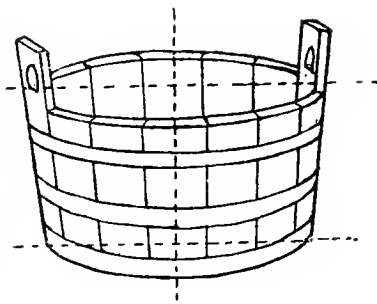
Describe in words how to make an angle equal to the angle at A.

In the last problem on p. 24 does it signify whether we take small or large divisions on the lines A 5 and B 5?

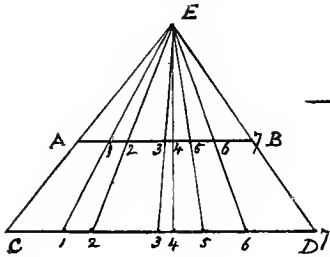
In what position are these 2 lines to be to each other?

9TH LESSON.

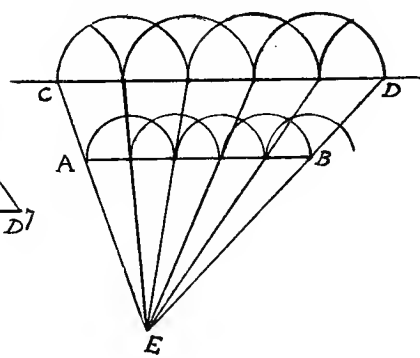




To divide the line A B into parts, in the same proportion as those in C D



To draw a pattern on a different scale.



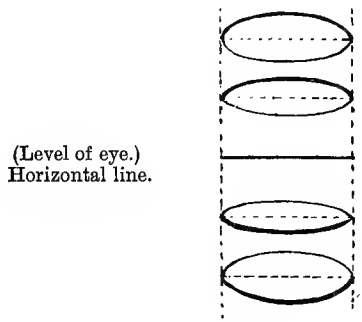
HOME LESSONS.

Tongs. Shovel. Tea Pot.

Make a line $3\frac{1}{2}$ *inches long; divide it into* 10 *equal parts.*

IN LESSON 9.

If the Flower Pot (or Tub) were placed lower, would the top look more round and open, or less?

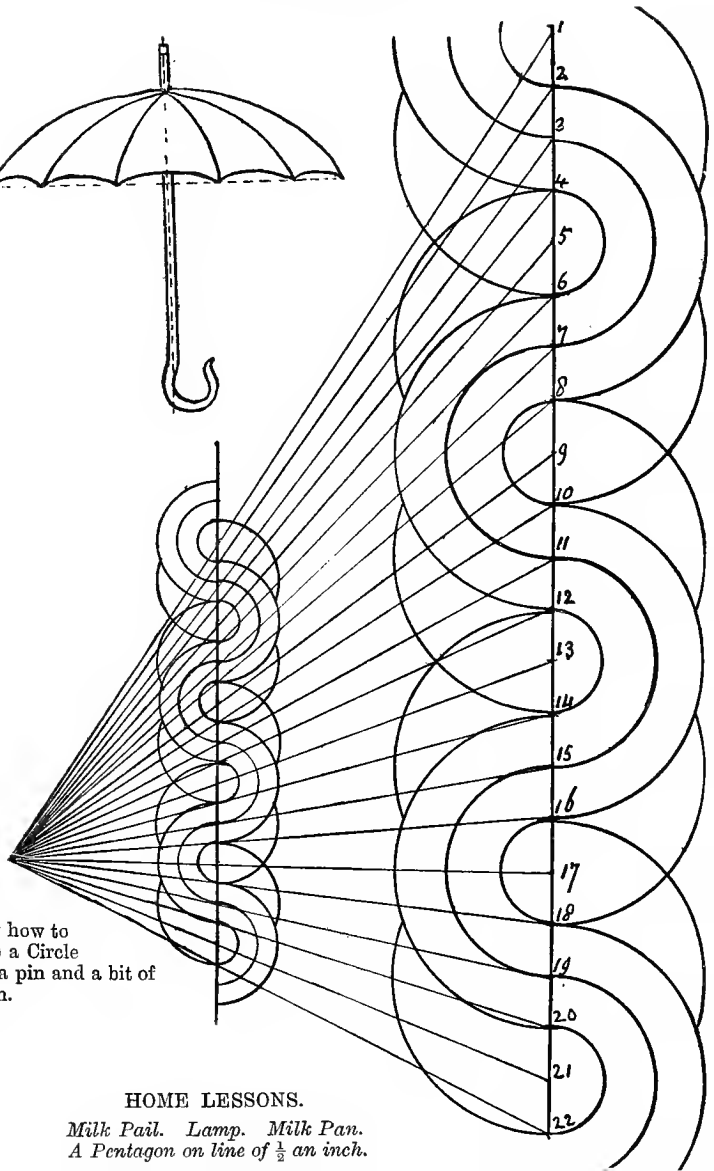


Give a lesson on this.

In what position must the line A B be placed with regard to C D in figs. 3 and 4

How do you find the point E?

10TH LESSON.



Show how to make a Circle with a pin and a bit of cotton.

HOME LESSONS.

Milk Pail. Lamp. Milk Pan.
A Pentagon on line of $\frac{1}{2}$ an inch.

IN LESSON 10.

Why do we make the divisions of the Umbrella smaller as we get to the sides?

What line in the Circle is represented by the cotton?

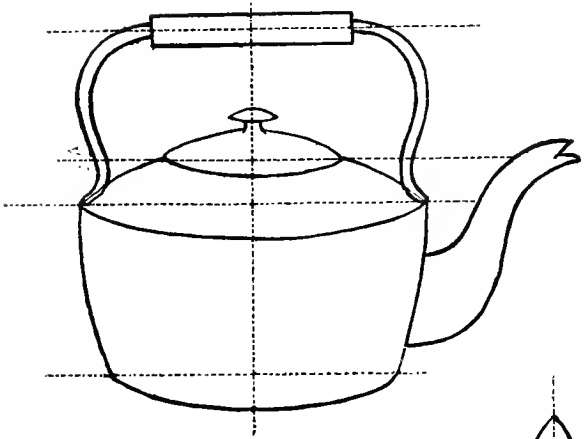
What is the point where the pin stands?

What is the line which the pencil draws by the use of the cotton?

What is a Pentagon?

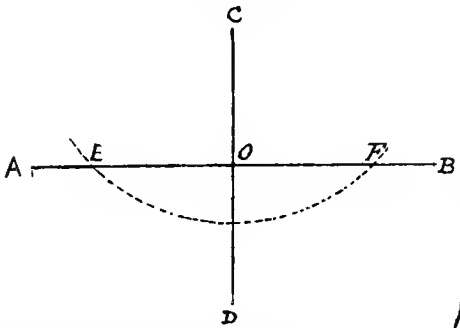
Describe in words how to make a Pentagon. Teacher draw it on the board from the pupils' dictation.

11TH LESSON.

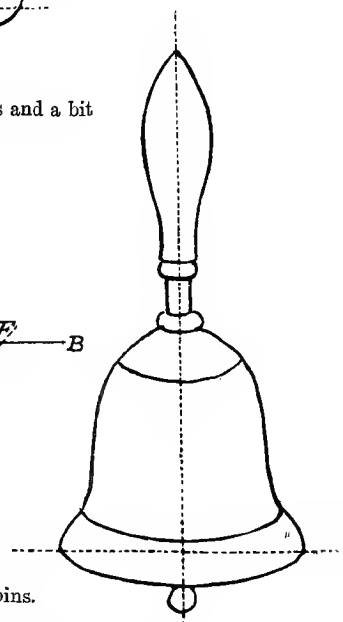


Show how to make an Ellipse with 2 pins and a bit of cotton.

Axis—Axes; Focus—Foci.



To find foci: with compasses take $\frac{1}{2}$ long axis (A O); from point C or D make an arc cutting long axis in E and F. E and F are the foci; the points for the pins.



HOME LESSONS.

Axe or Hatchet. Frying-pan. Hammer.
Ellipse with axes of $2\frac{1}{2}$ inches and 1 inch.

IN LESSON 11.

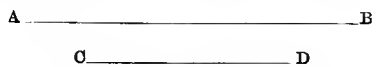
Are there any straight lines in this Kettle, and, if so, what sort are they?

What is the point E called? and the point F? What do we call the *two* points E and F?

If the Ellipse is long and narrow are the Foci nearer together or farther apart than if it is short and broad?

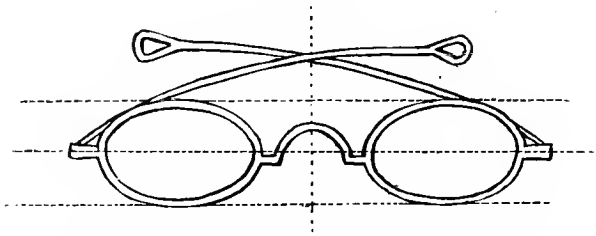
Are there any Foci in a Circle?

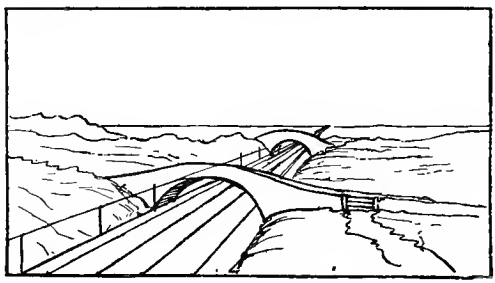
Let the pupils dictate how to place the Axes and find the Foci of an Ellipse; the Axes being given thus:



the teacher drawing it on the board from the pupils' dictation.

12TH LESSON.

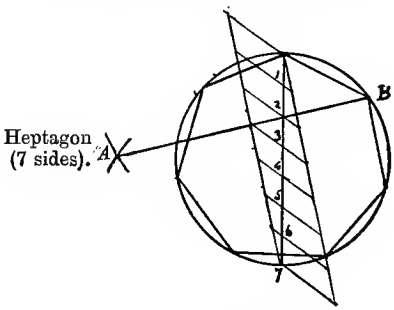




Vanishing points, for lines parallel to each other, and running away from spectator on a horizontal plane.

Polygon: a figure with many sides.

In a circle inscribe any regular polygon.



HOME LESSONS.

Egg in egg cup. Coal Scuttle.

Pentagon (5-*sided figure*) *in a circle.*

IN LESSON 12.

What shape are the glasses of the Spectacles?

(Teacher call attention to the window of the room: see how much of the outside view is seen through *one pane*; i.e. a whole street, hills, woods, &c. Imagine one pane of glass your paper, on which you are to draw; stand at the right distance for drawing on it; transfer to a paper what you see through one pane.)

Would a man (or other object) near at hand or far away look the largest?

What do we mean by a Vanishing Point?

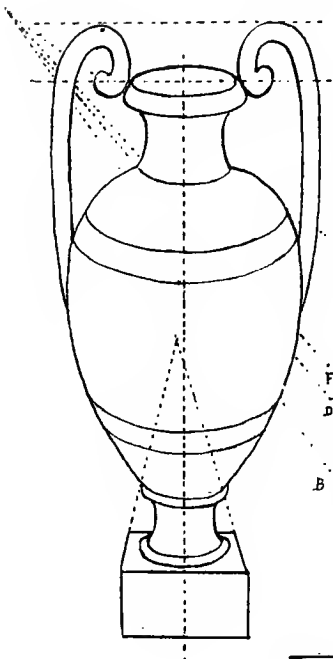
In what line do parallel lines on a horizontal surface, or plane, vanish?

What is a Polygon?

What is a Regular Polygon?

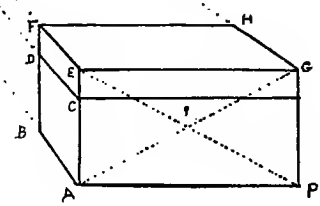
In constructing a Regular Polygon which point of the divided diameter must the line A B always pass through?

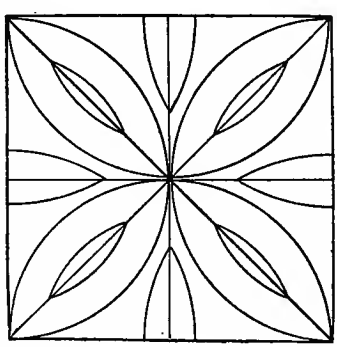
13TH LESSON.



Pentagon, figure with		5 sides.
Hexagon,	,,	6 ,,
Heptagon,	,,	7 ,,
Octagon,	,,	8 ,,
Nonagon,	,,	9 ,,
Decagon,	,,	10 ,,

(Learn these by heart.)





Copy this figure.
Sides of square 2 inches.

HOME LESSONS.

Coffee Pot.
Wooden Bucket.
Box, showing right-hand end.

IN LESSON 13.

What kind of lines are A B, C D, E F, G H?

What kind of lines at E A, F B, G P?

Will E A or F B appear the longest?—Why?

What kind of angles has the box?

What kind of angles do the following appear in the drawing, viz.: E G P, G P A, E G H, H F E, F E G, G E A, E A B, E A P, A B F, B F E, G H F, F E A?

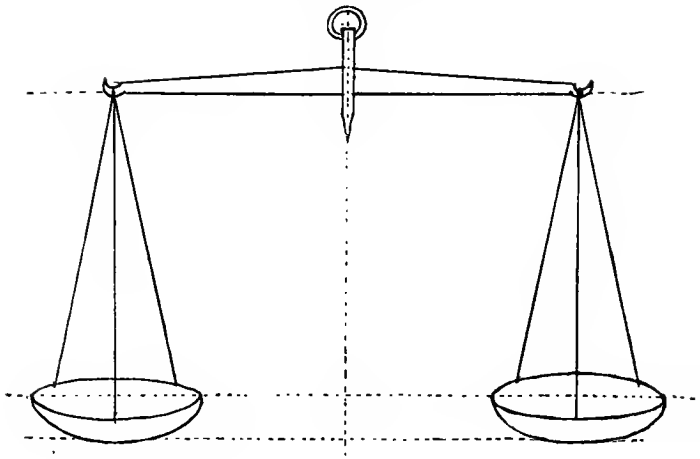
What do we call the shape which makes the front of the box?

Give the definition of that shape.

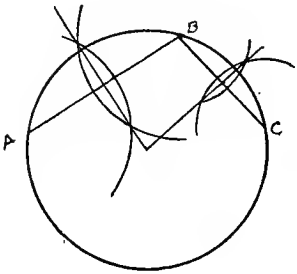
Describe how to make the square in the last figure.

What is a Square?

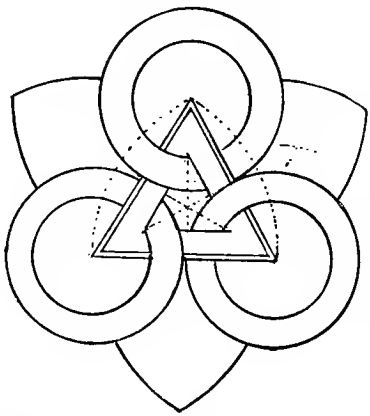
14TH LESSON.



To find the centre of a given circle.



Copy this figure.



HOME LESSONS.

Ink Bottle. Stool. Tumbler.

A Square; inscribe a circle, and show how to find the centre of the circle.

IN LESSON 14.

Why must the two sides in the Scales be exactly alike ?

Say what figures the following names describe respectively Decagon, Heptagon, Pentagon, Nonagon, Hexagon, Octagon.

What do we mean when we call figures Regular ?—Irregular ?

The lines A B and B C are called chords of the Circle. How must they be placed in order to find the centre ?

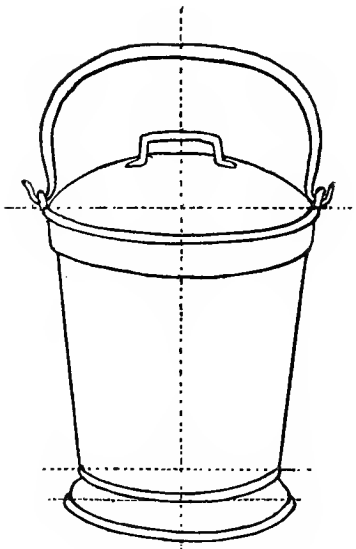
Describe in words how to find the centre of a Circle.

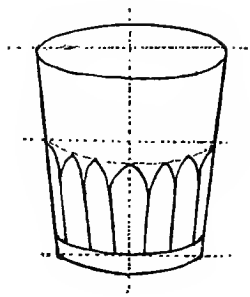
What do we call the straight-line figure in the middle of the last drawing of this lesson ?

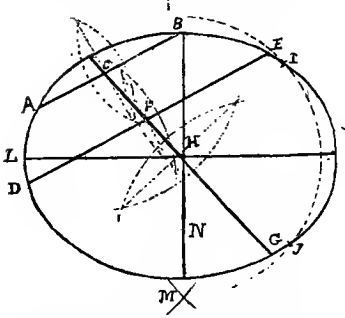
Could you make a Circle round this figure to touch all the circles ? If so, where would you place the compasses ?

What can you tell about the Circles in this figure ?

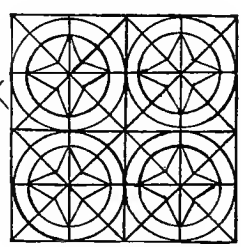
15TH LESSON.







To find the Centre and the Axes of an Ellipse.



Copy this figure: sides of large square $2\frac{1}{2}$ inches.

HOME LESSONS.

Spade. Bellows. Corkscrew.
Make an Ellipse with pins and cotton; find the centre.

IN LESSON 15.

If you wish to make a longer Ellipse than this, how must you place the pins?

Having drawn one chord, how do you place the other?

What do you do next in order to find the centre of the ellipse?

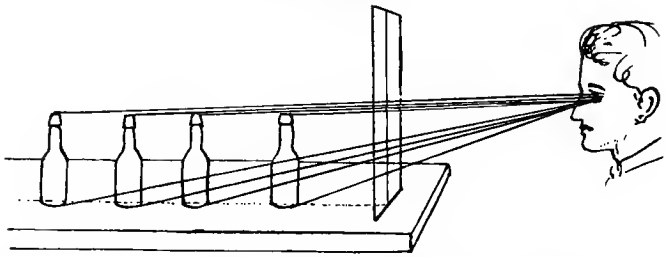
How many lines have you to bisect?

Having found the centre, how do you find the long axis?

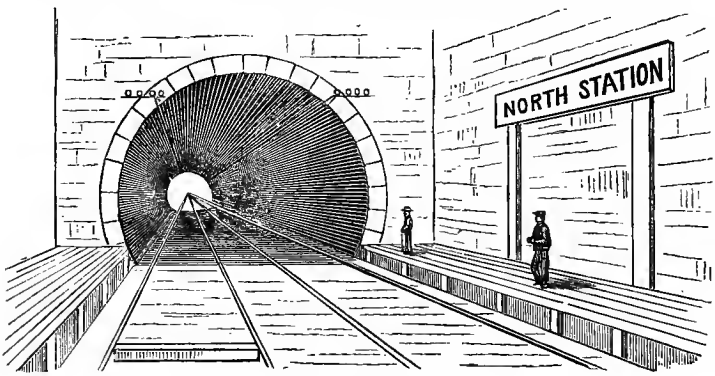
Then, how do you find the short axis?

Questions on lines, angles, circles, in geometrical figure.

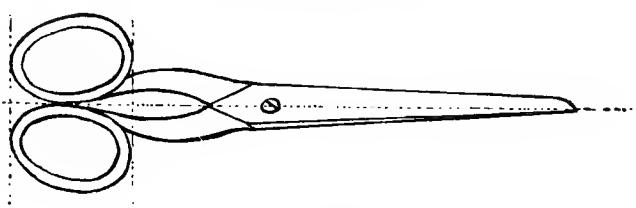
16TH LESSON.



Shows the comparative spaces occupied, on a piece of glass or paper, by near and distant objects.



Example of the above.



HOME LESSONS.

Hay Fork. Mallet. Square or Oblong Table. Ellipse; find the Axes and the Foci.

IN LESSON 16.

Which of the four Bottles will take up most space on your pane of glass or paper ?

How can you tell the height (or level) at which your eye is, when you make this drawing of the Railway Tunnel ?

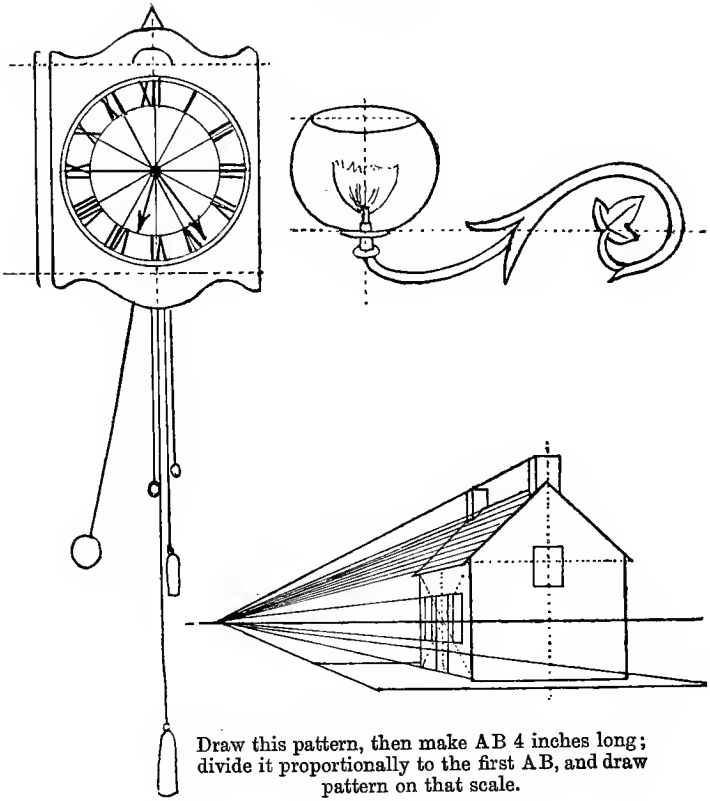
Are you standing on the same level as the men on the platform, or higher or lower ?

If your eye were on the level of the platform, how would that platform be represented ?

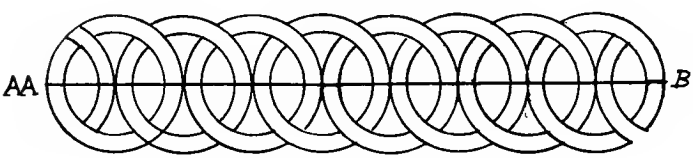
If the bar which lies between the left-hand rails were at the entrance to the Tunnel, would it appear longer or shorter than it now does ?

Why does the 2nd Standard of the 'North Station' label look shorter and narrower than the 1st ?

17TH LESSON.



Draw this pattern, then make AB 4 inches long; divide it proportionally to the first AB, and draw pattern on that scale.



HOME LESSONS.

Watch. A Book, shut, standing up, back turned. Cask or Barrel.

IN LESSON 17.

Describe the mode of dividing the circle for the numbers on the Clock.

What line of the circle is taken by the compasses for the division, and how used ?

Is the roof of the Cottage above or below your eye ?

Which point in this drawing is exactly opposite to your eye ?

What is the line called, in which that point lies ?

If you went up a hill, would the horizon in your drawing be placed as it is in this drawing ?

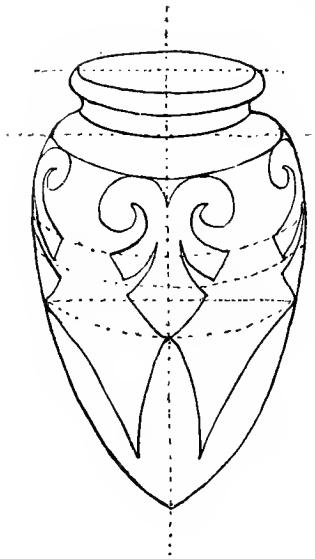
In what way would the Cottage look different if you went up a hill and looked at it from there ?

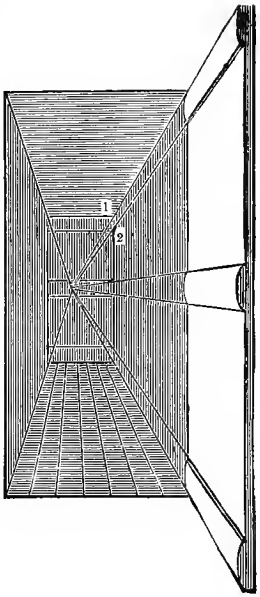
What difference would there be in your view of the chimneys ?

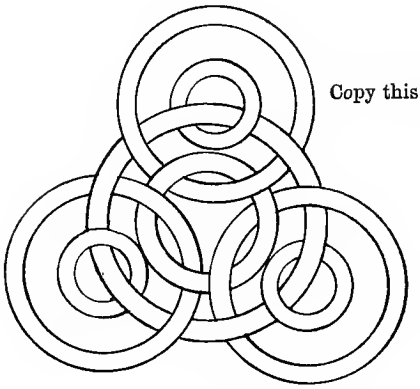
What kind of line is A B in the last figure of Lesson 17 ?

What do I mean if I say that these circles are 'similar' and 'concentric' ?

18TH LESSON.







Copy this figure.

HOME LESSONS.

Sickle. Coal Scuttle. Chest of Drawers, seen end-ways. Ellipse, with circle round it, and square outside circle.

IN LESSON 18.

If you are 5 feet tall, and you are walking with two brothers, one 6 feet tall and the other 4 feet, and each wears a straw boating-hat, how would each hat appear to you? (Draw them.)

Which curve in this Jar will be the most round and open, the curve of the top of the jar or the dotted curve lowest down? Tell the reason.

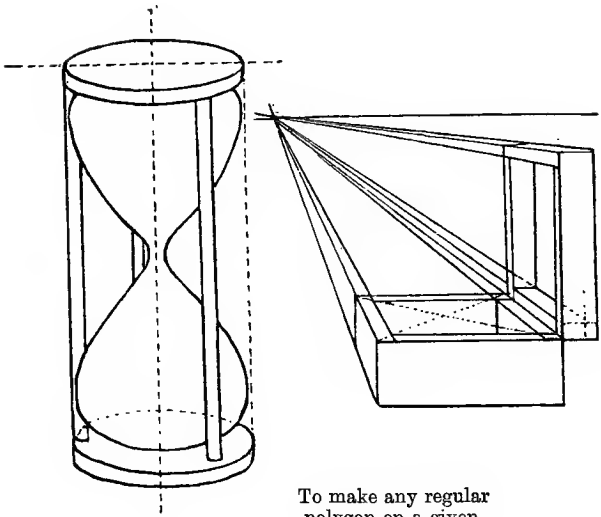
If I put the Jar on a shelf above your head, how would the curves look then?

If you measure the first door of this Passage, and then walk along it and measure the door at the other end, which would be the largest?

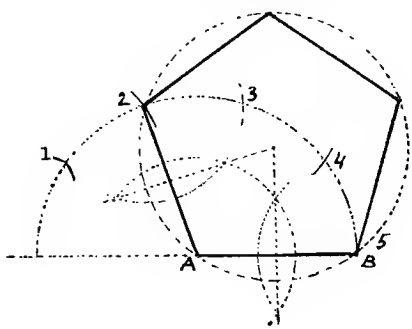
Make a side representation of six lamp-posts, at equal intervals, and show on a pane of glass or paper the relative spaces which they will seem to occupy to a person looking at them through the glass.

Put a circle and a triangle round the Geometrical Figure. What is that triangle called, and what does the name mean?

19TH LESSON.



To make any regular polygon on a given line AB.



HOME LESSONS.

Washing-tub. Scythe. Work Box, showing right-hand end. Octagon on given line.

IN LESSON 19.

What position do the top and bottom of the Hour Glass occupy to each other?

What position are the little posts in with regard to the top and bottom slabs?

Is this Box placed above or below your eye?

If it were placed on a shelf near the ceiling, what direction would the receding lines take?

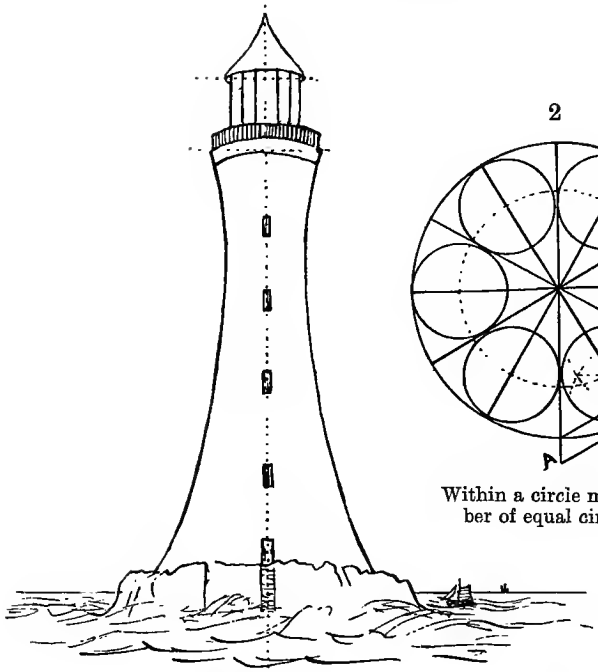
What is the line on which these lines meet?

In the Polygon, to which point in the divided semicircle does the second side of the polygon always go to?

Why do we bisect the lines A B and 2 A?

What does 'bisect' mean?

20TH LESSON.



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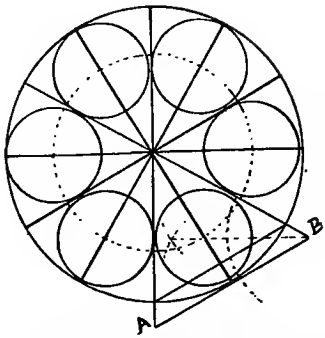
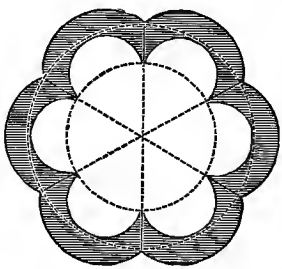
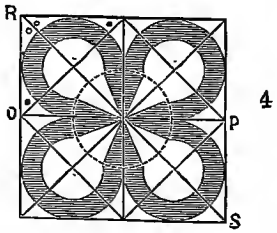


Within a circle make any number of equal circles; say 6.

3





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HOME LESSONS.

Kettle. Chisel. Broom. In a circle make 8 *equal circles. At centre of a circle make angles of* 90°, 45°, 60° 30°.

IN LESSON 20.

In fig. 1 how high is the eye of the spectator?

In fig. 2 describe how to get the six divisions in the circumference of the circle.

Describe how the line A B is got.

Describe how to bisect the angle at B.

What does this bisection give us?

Describe how figure 3 is made.

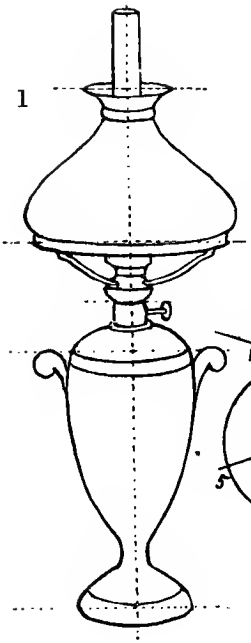
In fig. 3 what is the size of the angles at the centre?

In fig. 4 how many degrees are there in the angles marked . , and in those marked ∘ ?

What is the line O P in the square called, and what the line R S?

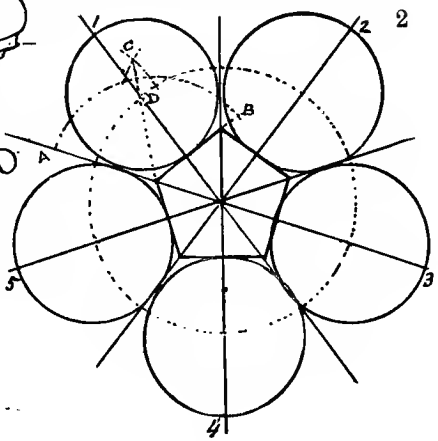
21ST LESSON.

1



To draw a number of equal circles round a regular polygon, touching one another and the sides of the polygon.

2



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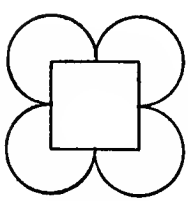

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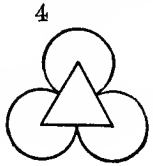

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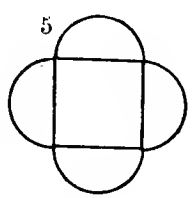


HOME LESSONS.

Pair of Compasses. Saw. Jug and Basin. Hexagon with 6 circles round.

IN LESSON 21.

In fig. 2 describe in words how to make the Pentagon.

What is the next thing to do in carrying out this problem?

What do we obtain by that?

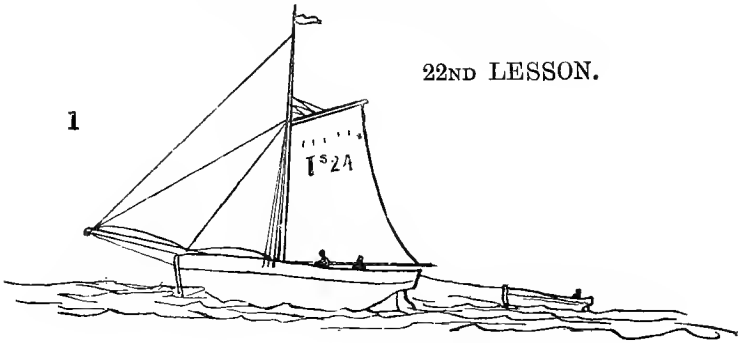
If you join the points 1, 2, 3, 4, 5, what figure do those lines make?

Is that figure parallel to the original pentagon?

What angles are there in figures 3, 4, 5?

22ND LESSON.

1



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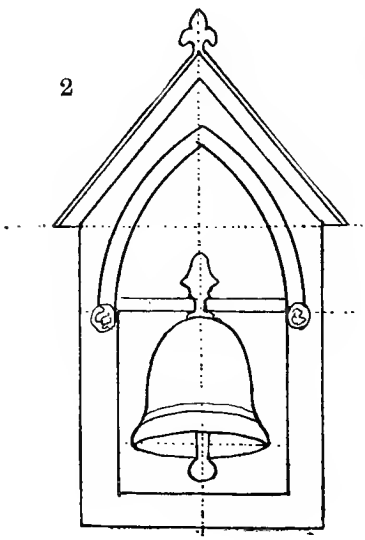
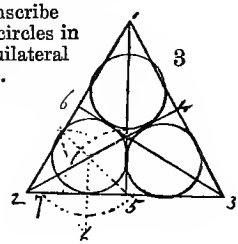


Quatrefoil (4-leaved figure).

To inscribe 3 equal circles in an Equilateral Triangle.

3



Trefoil (3-leaved figure).

Copy these two figures.

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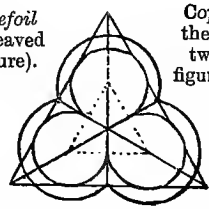

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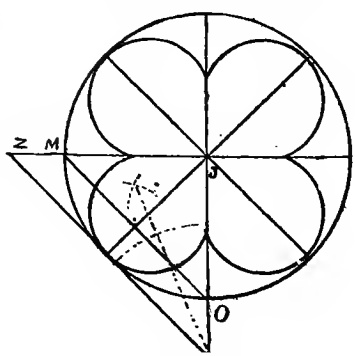


HOME LESSONS.

Pair of Shears. Button Hook. Vase. Make a Trefoil and a Quatrefoil from memory.

IN LESSON 22.

Fig. 1. Why do you not see inside the Boat ?

Fig. 2. Why do you see inside the Bell ?

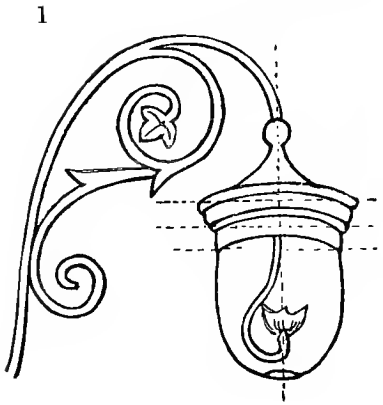
Fig. 3. Which angle has to be bisected in order to find the centre for the circle ?

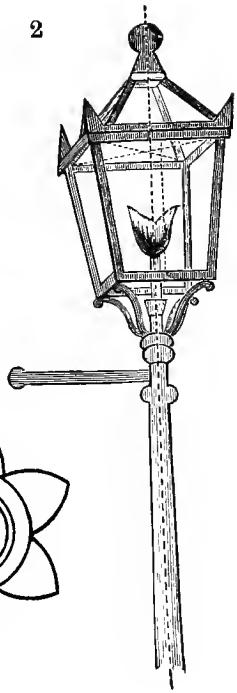
Why do we, then, make and bisect the arc 7–5 ?

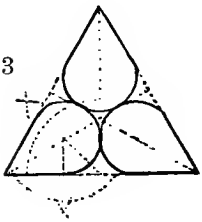
Fig. 5. In what position must Z S lie with regard to M O ?

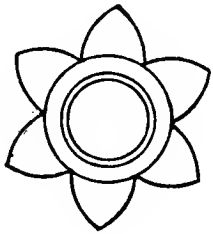
Which angle must we bisect ?

23RD LESSON.









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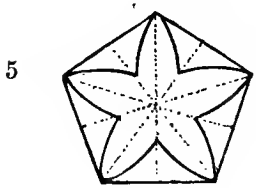
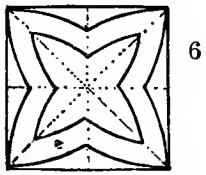




HOME LESSONS.

Table, with Plate, Bottle, and Glass on it. Make a Heptagon (7-sided figure) in a circle. Make 5 equal circles in a circle. Make a Triangle with angles of 60° and 30° : say how many degrees in the 3rd angle.

IN LESSON 23.

In figs. 1 and 2, is the spectator standing below or above the lamps?

Fig. 2. What sort of angles has the front pane?

Fig. 3. How many degrees in the angles of the Triangle?

Fig. 4. How do you describe the 3 circles?

How many arcs do you make from each of the 6 points on the circumference?

How are those 6 points found?

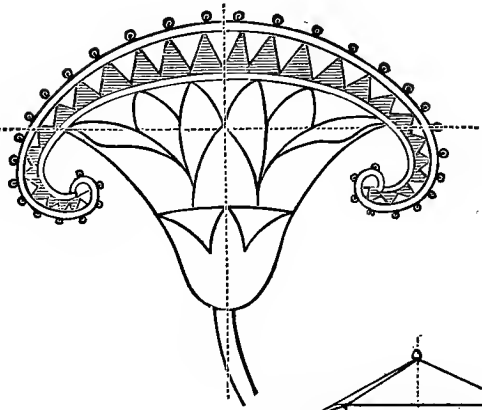
Fig. 5. How many degrees in each angle of the Pentagon?

How many arcs are you to describe from each angle?

Fig. 6. Where do you place the compasses to make this figure?

24TH LESSON.

1



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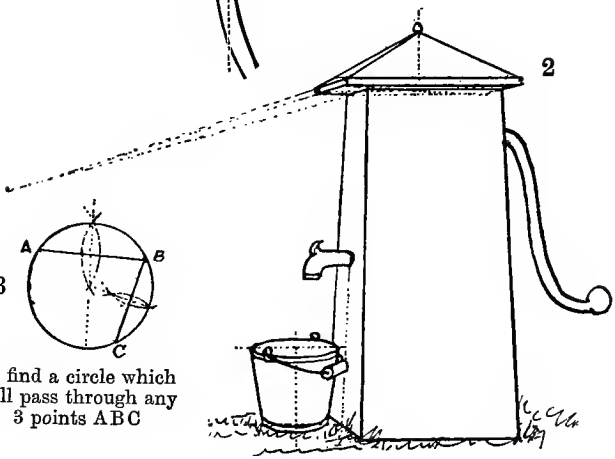
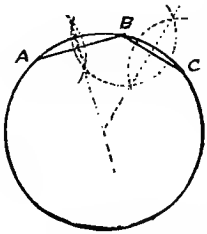


3

To find a circle which will pass through any 3 points ABC

4



HOME LESSONS.

Churn. Pickaxe. Watering-Can.
Make a Hexagon, and construct 3 parallel hexagons at equal distances round the first.

IN LESSON 24.

Fig. 2. How high do you stand in looking at this Pump?

Describe why we have drawn the dotted line from the spout to the base.

Is the pail touching the front of the pump, or could it go nearer?

How do you find the place for the point at the top of the pump?

Figs. 3 and 4. What are the lines A B, B C called?

How must they be placed?

Does it matter whether they are long or short?

When rightly placed what is to be done to them?

Describe what follows when they are bisected.

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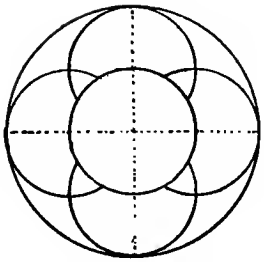
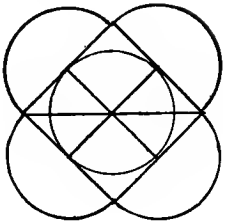
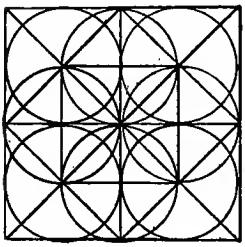
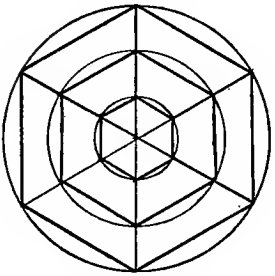
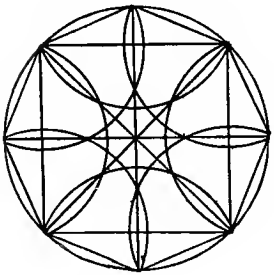
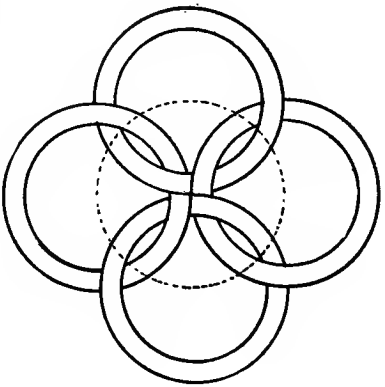


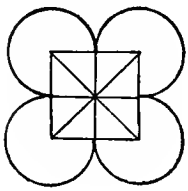


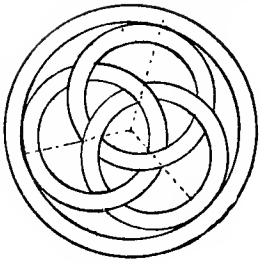


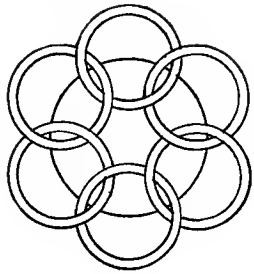


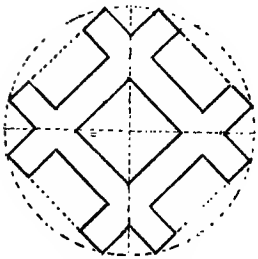


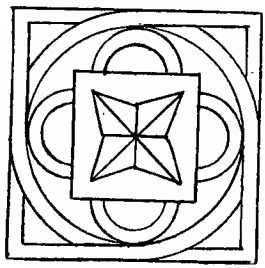


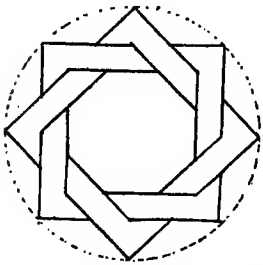


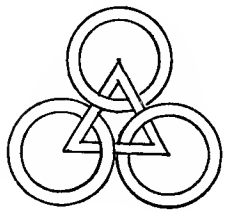


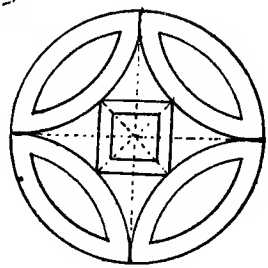


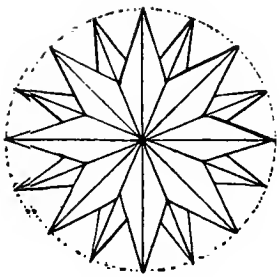


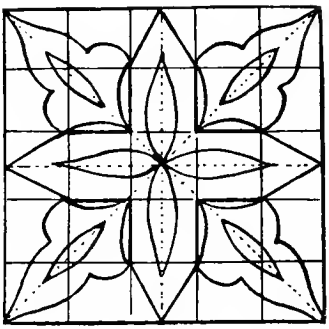


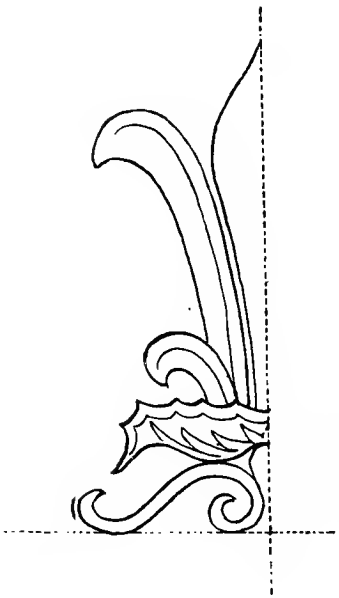


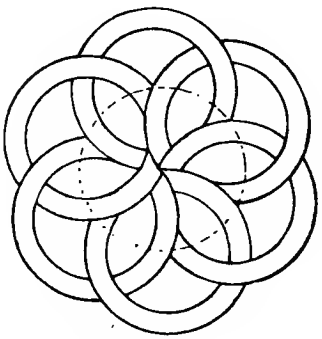


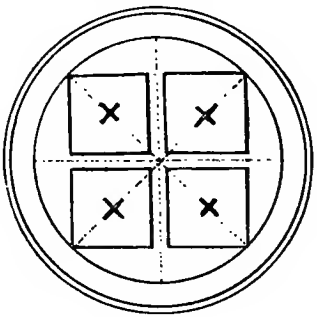




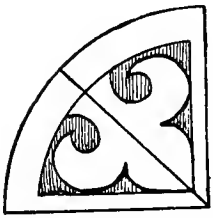




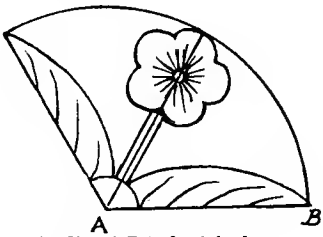




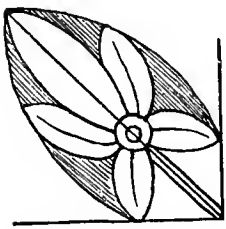
PATTERNS TO COPY AND COMPLETE ON DIFFERENT SCALES.



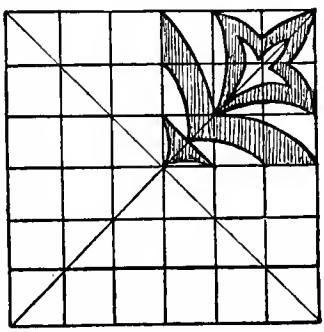
Circle 3 inches in diameter.
Complete it.



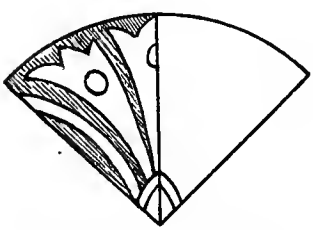
Radius A B to be 2 inches.
Complete the circle.



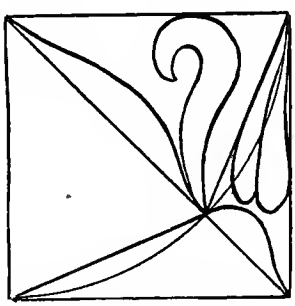
This is $\frac{1}{4}$ of pattern; each leaf to be 2 inches long.



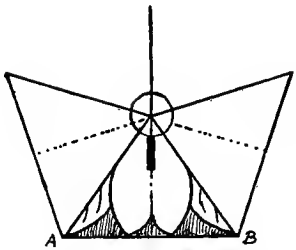
Square of $3\frac{1}{2}$ inches.



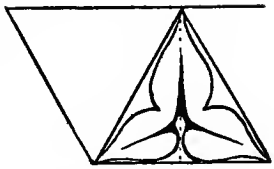
Circle 3 inches in diameter.



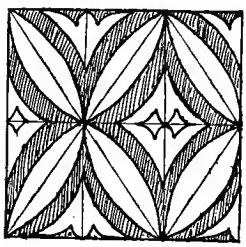
4 squares, $2\frac{1}{2}$-inch sides; centre at C.



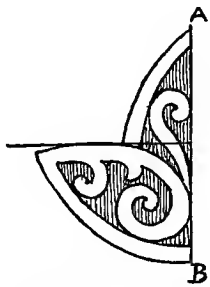
A Pentagon; AB to be $1\frac{1}{2}$ inch.



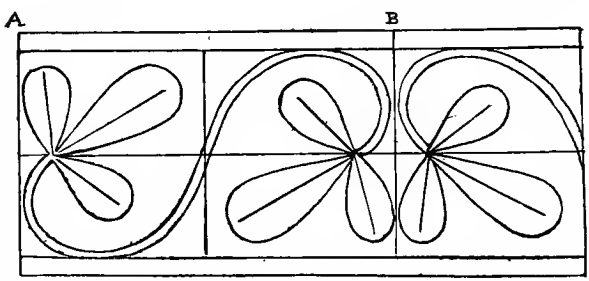
A Hexagon, with sides of 2 inches.



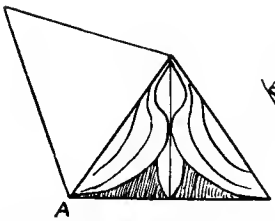
12 Oblongs of this pattern; $\frac{3}{4}$ inch × $\frac{1}{2}$ inch.



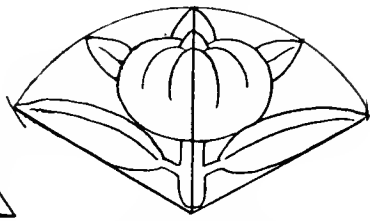
AB to be $3\frac{1}{2}$ inches; this is half the pattern.



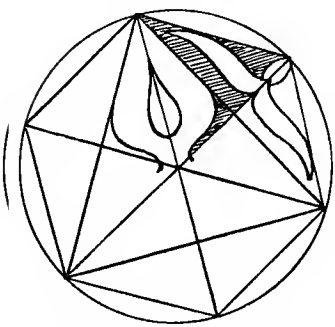
Make AB 3 inches long, and the rest of the pattern in proportion.



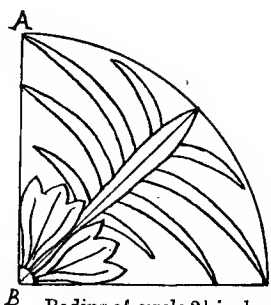
Make a Pentagon, with sides of 2 inches, by making angles equal to the angle at A. Draw the pattern.



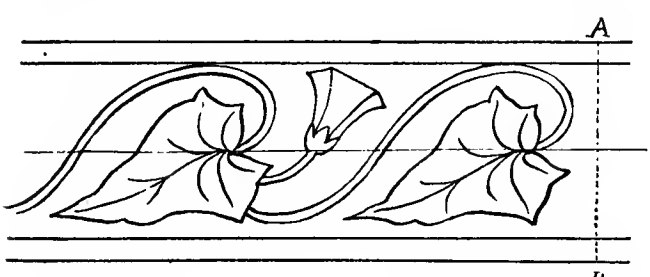
Make a Circle, with diameter 3 inches. Complete pattern in circle.



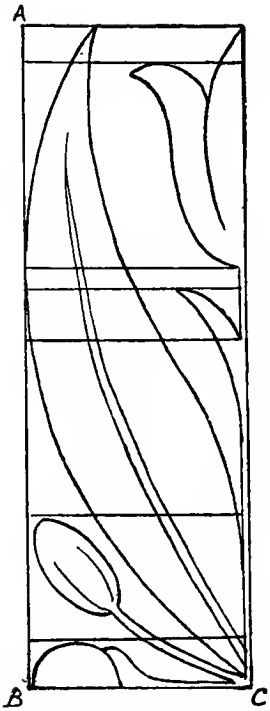
Radius of circle $2\frac{1}{2}$ inches. Complete the pattern.



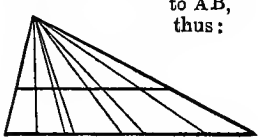
Radius of circle $2\frac{1}{2}$ inches. Complete the pattern in a circle.



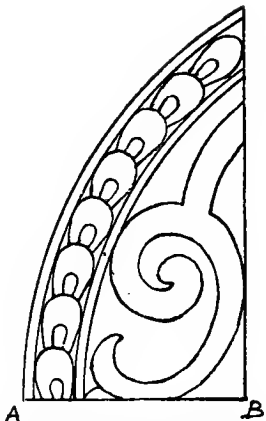
AB to be 2 inches. Continue pattern to the length of 6 leaves.



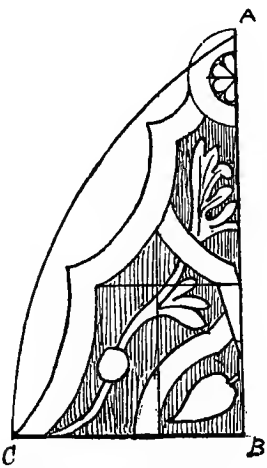
AB to be 3 inches, B C to be 1 inch. Divide a line of 3 inches proportionally to AB, thus:



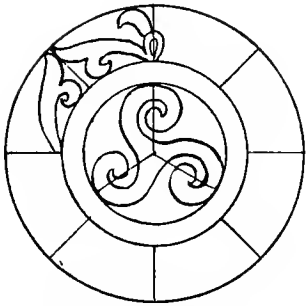
This pattern is a quarter of the whole. Complete the pattern.



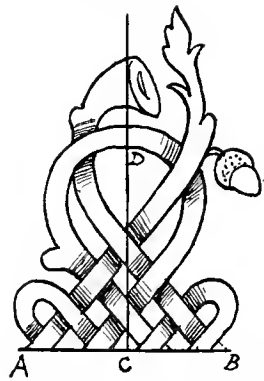
A B to be 1½ inch. Complete pattern, of which this is a quarter.



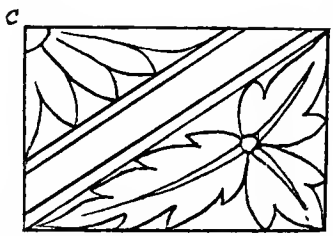
C B to be 2 inches. This is a quarter of the pattern. Complete the whole.



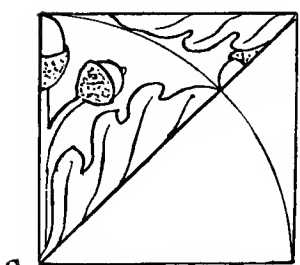
Outer circle 3 inches in diameter.



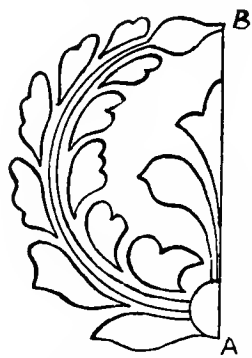
AB, CD to be 3 inches.



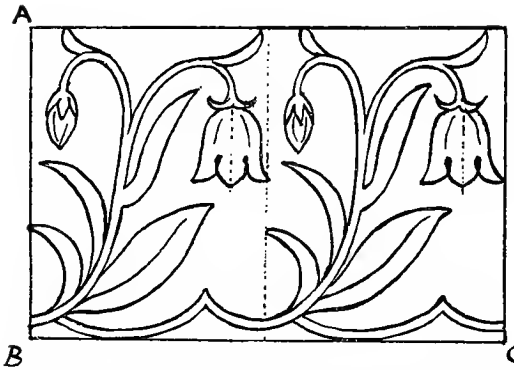
4 oblongs of 3 inches × 2 inches each. C to be the centre.



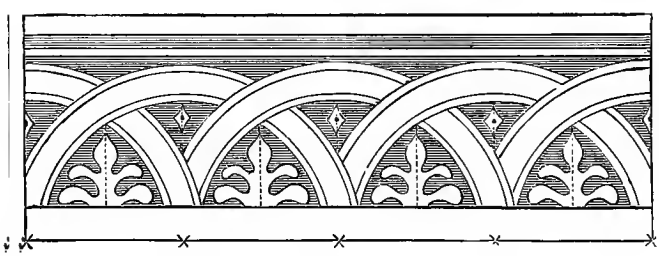
4 squares of $2\frac{1}{2}$ inches each, meeting at centre C.



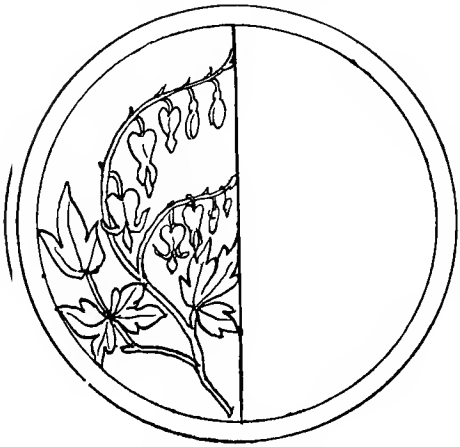
This is half the pattern. AB 4 inches.



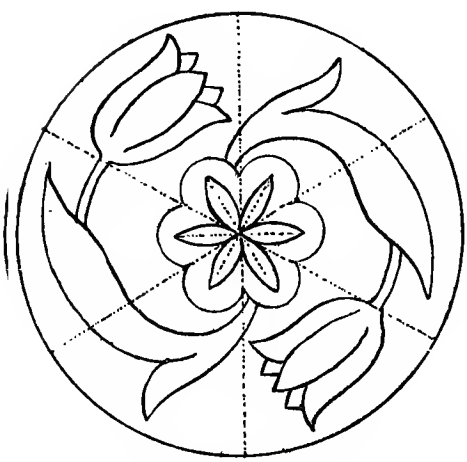
Make A B 3 inches and B C $4\frac{1}{2}$ inches. Repeat the pattern 3 times.



Outer circle $1\frac{1}{2}$ inch radius. Repeat the pattern 6 times.

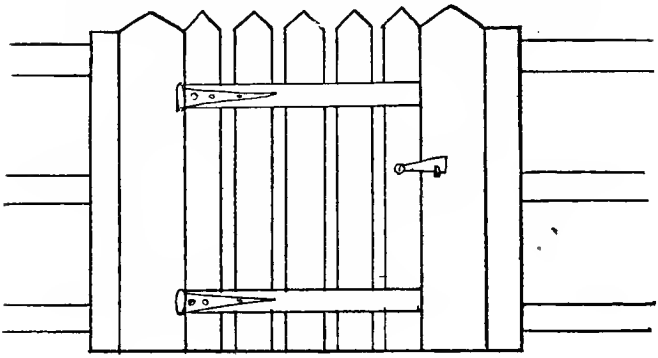


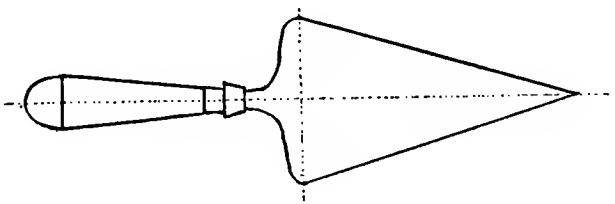
Radius 1½ inch.

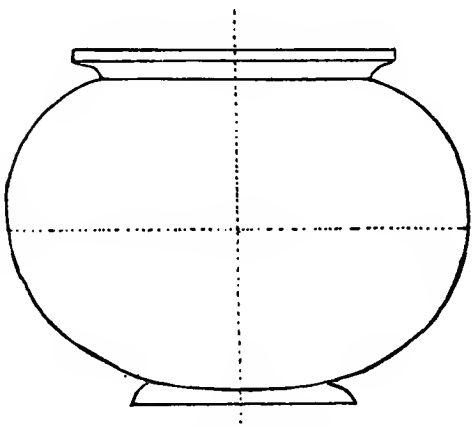


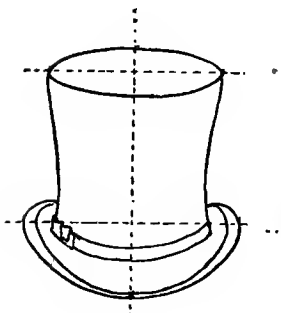
Diameter 3 inches.

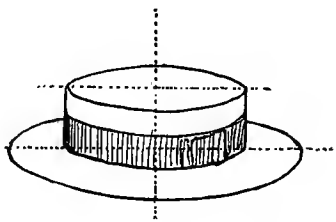
ADDITIONAL DRAWINGS FOR LESSONS.

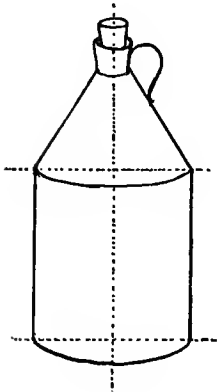


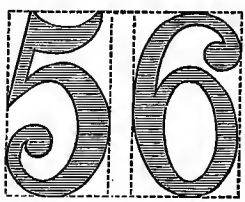


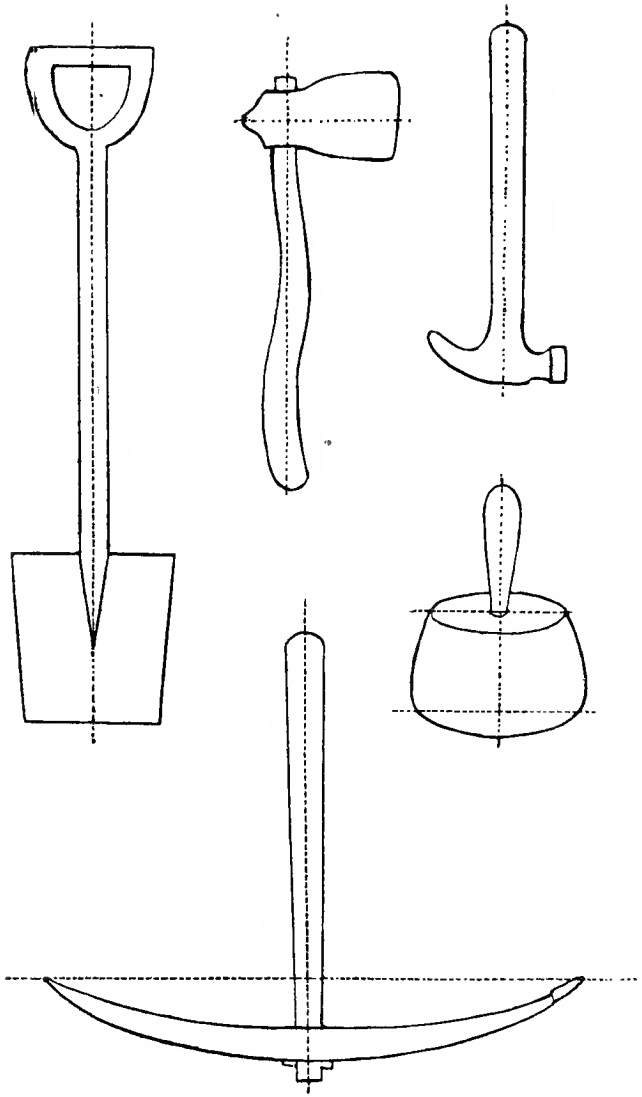


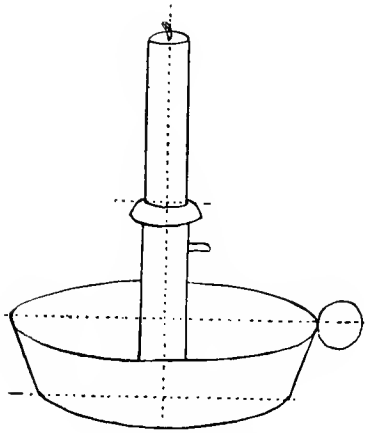


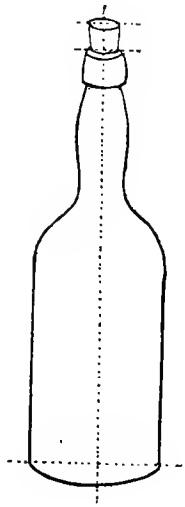


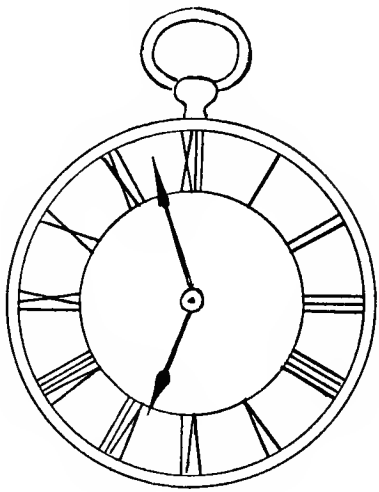


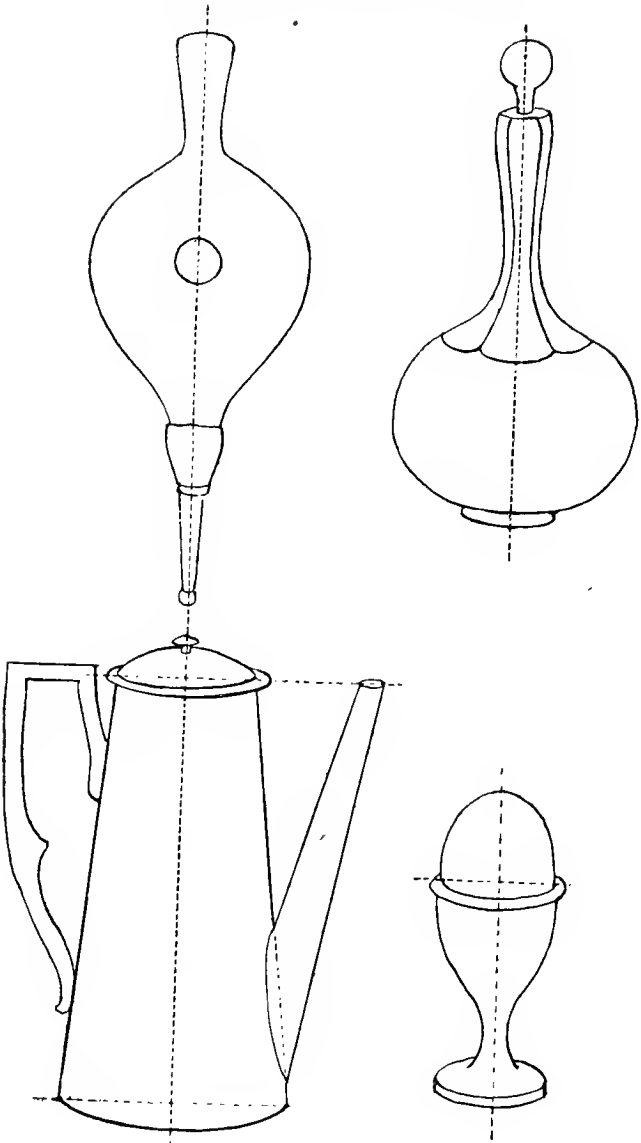

56

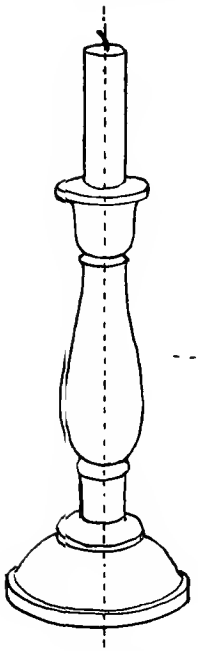


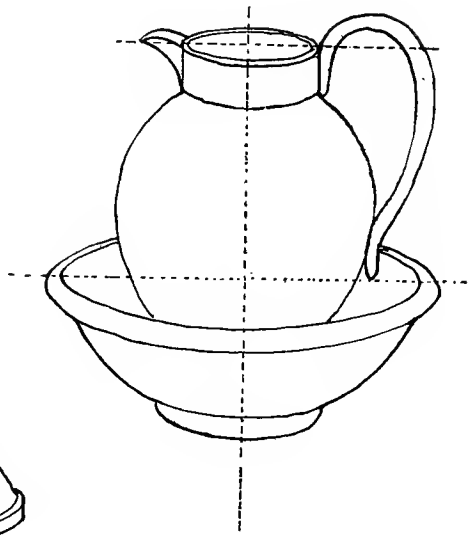


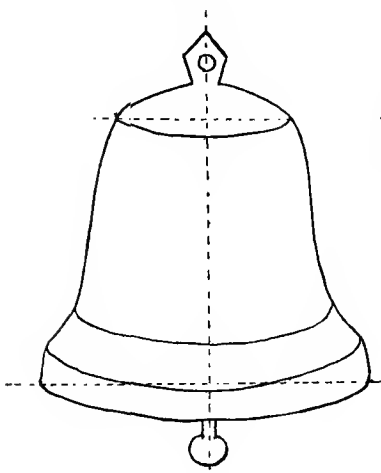


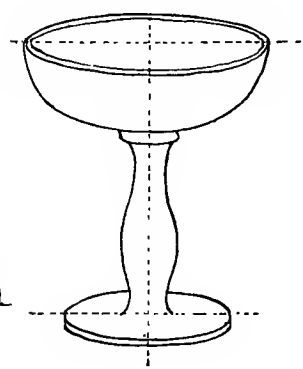


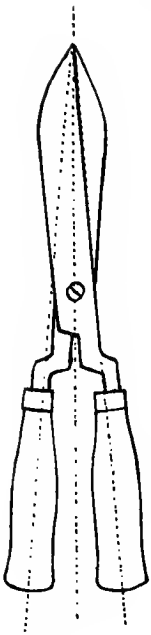


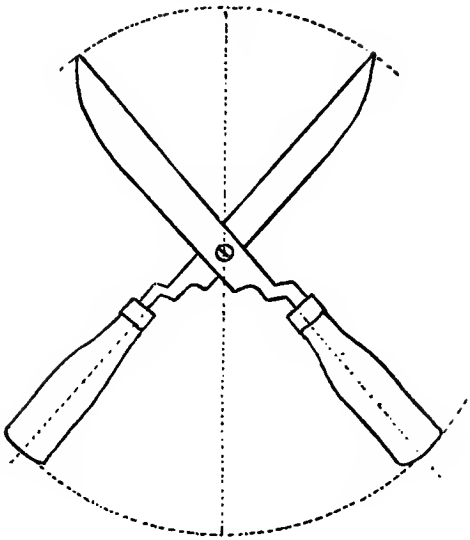


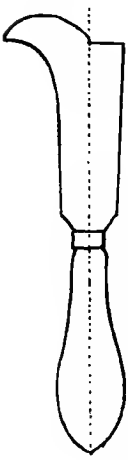


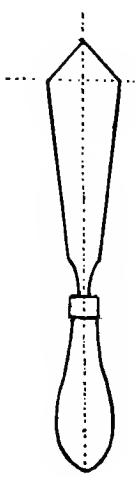


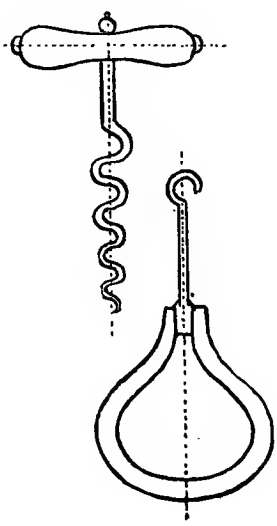


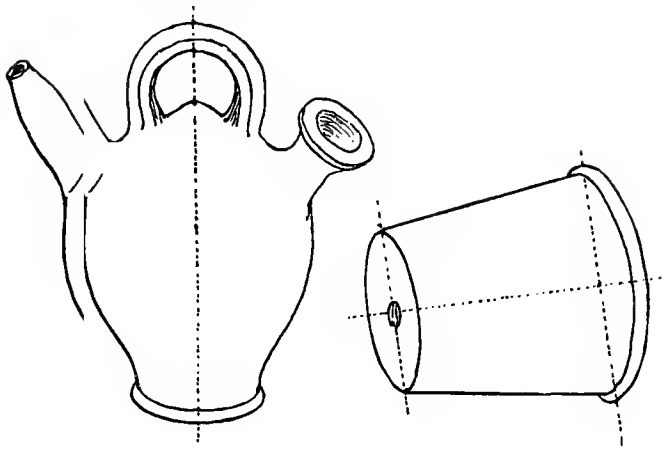


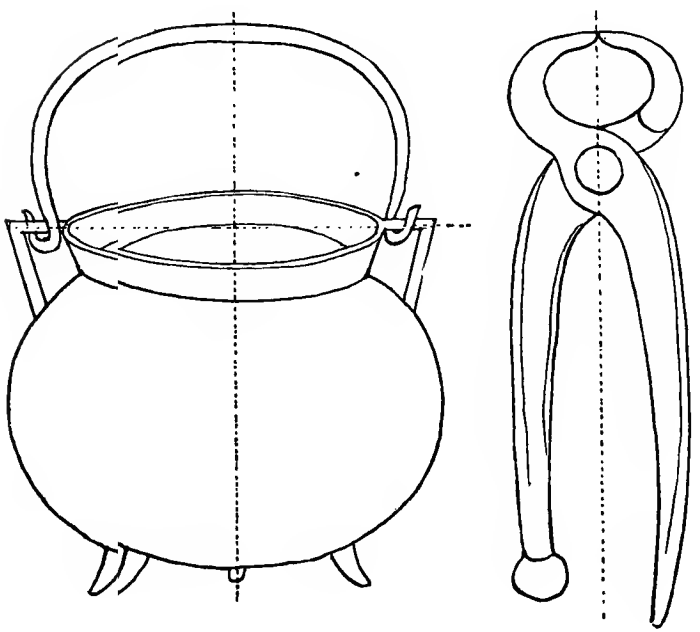


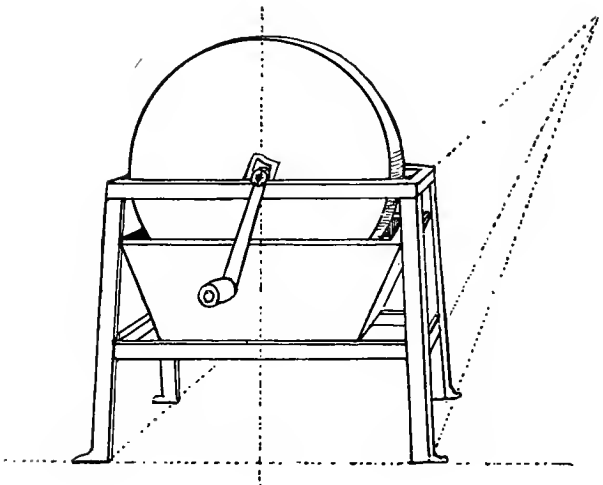


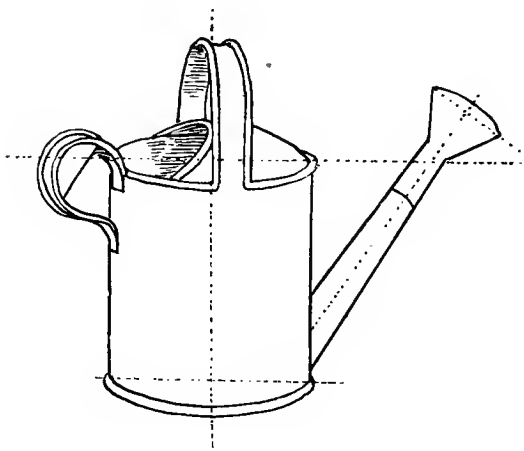


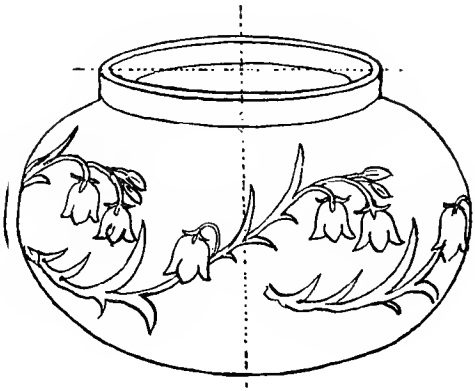


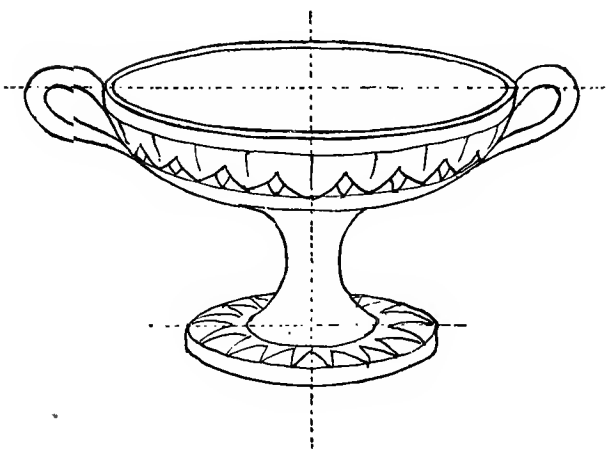


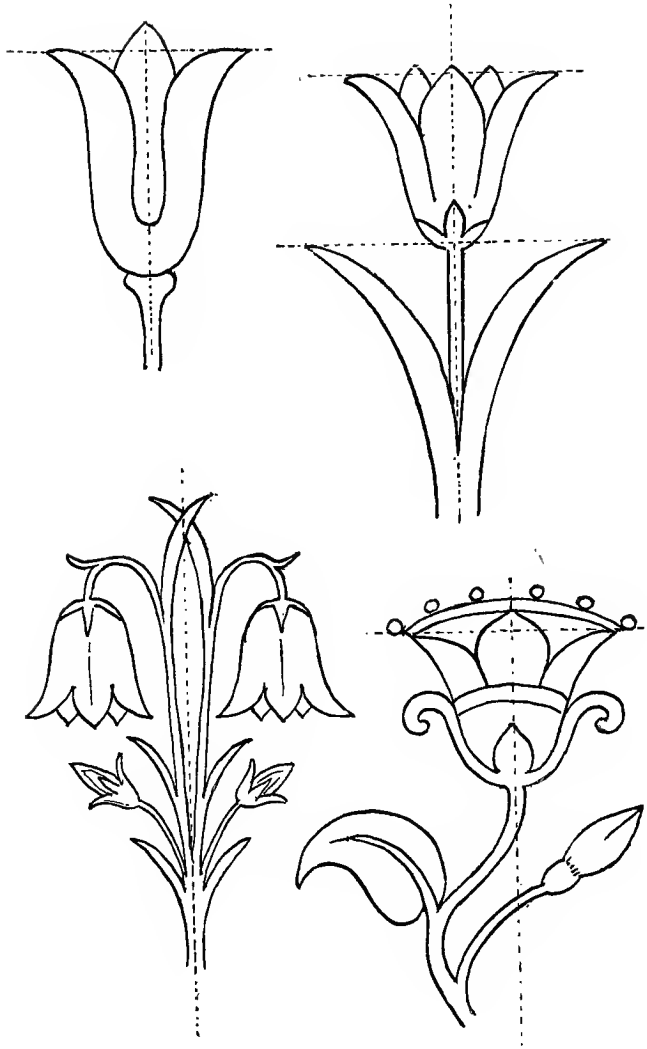


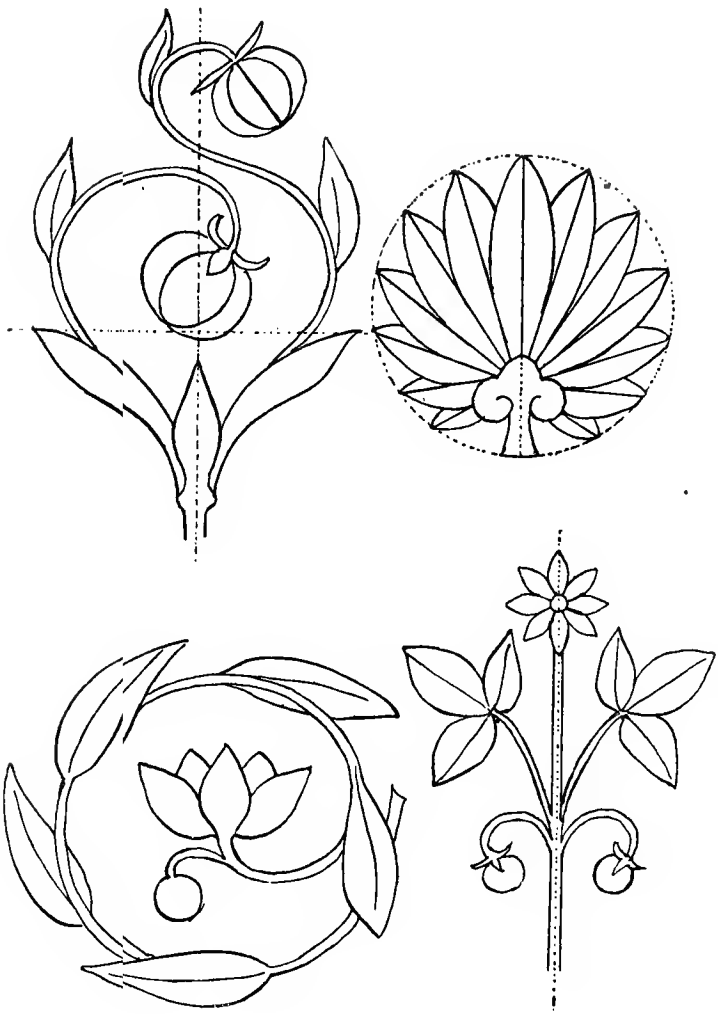


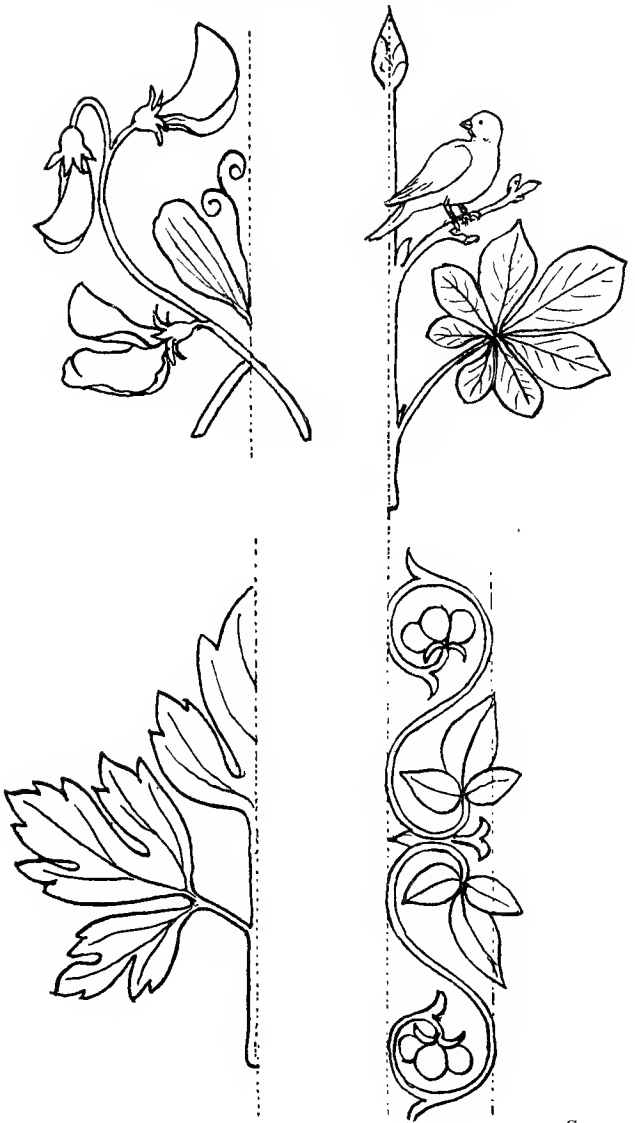


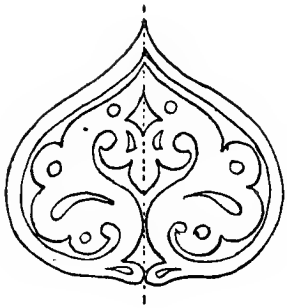


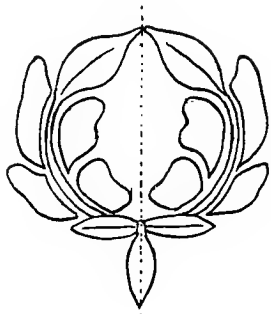


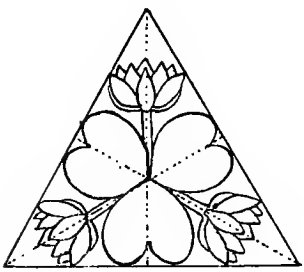


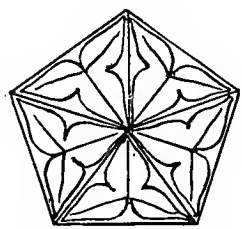


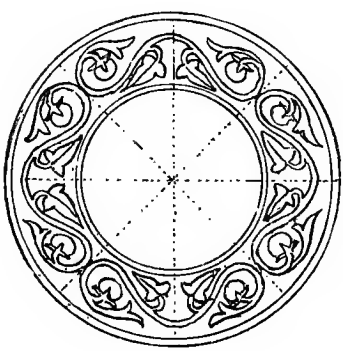


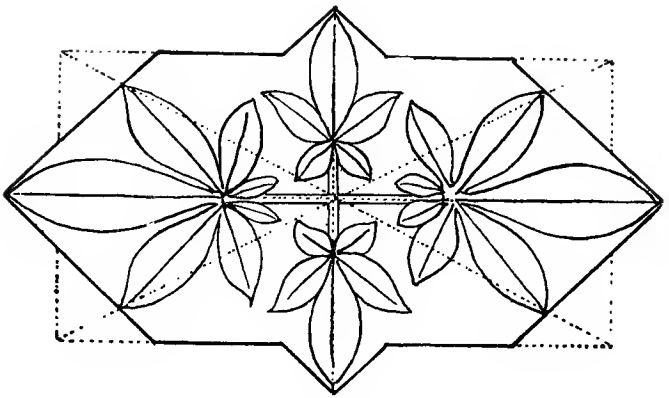


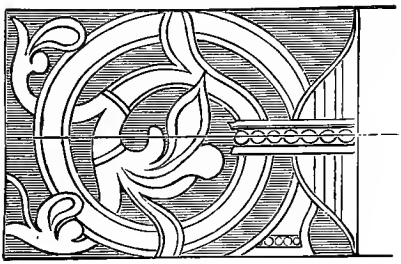


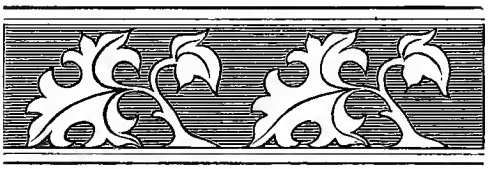


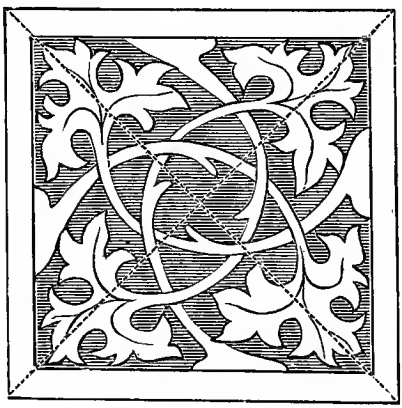


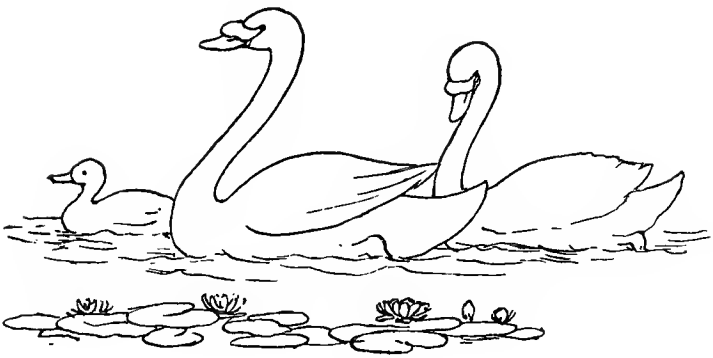


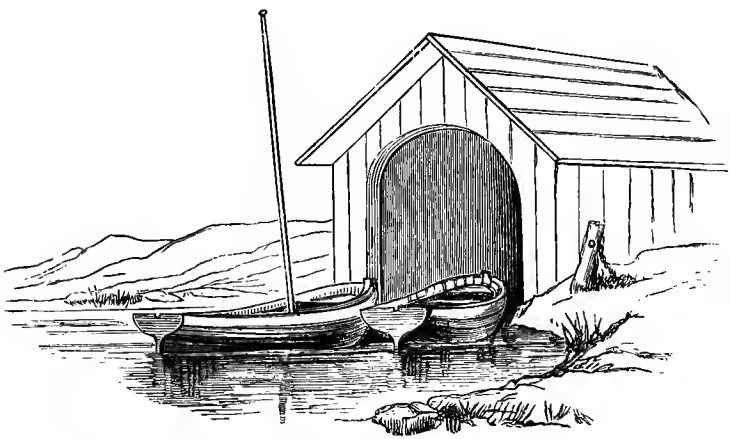


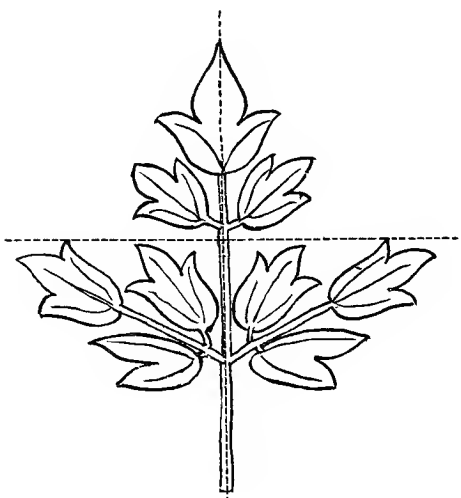


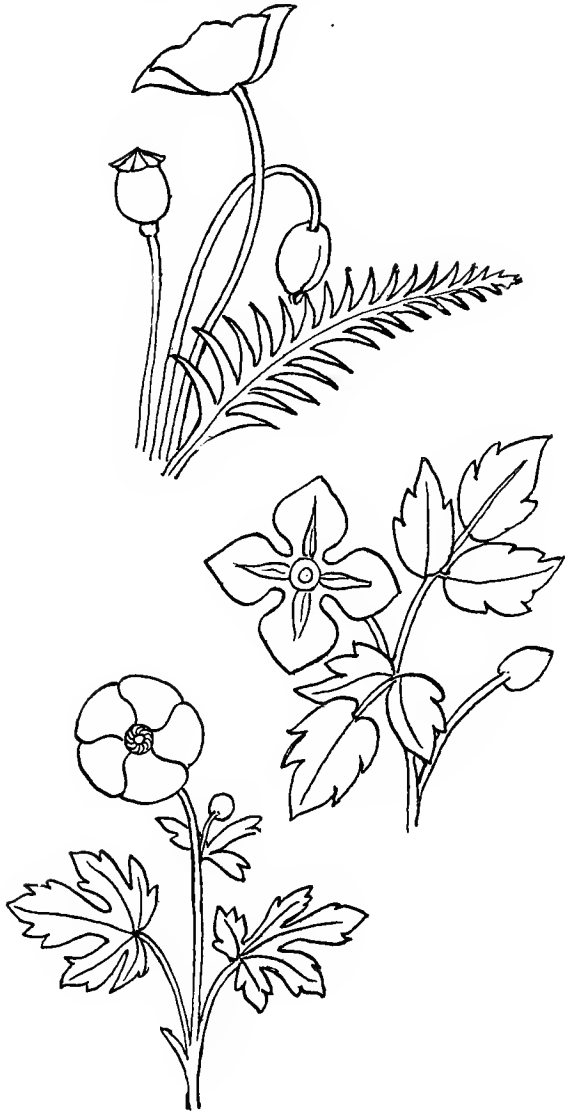




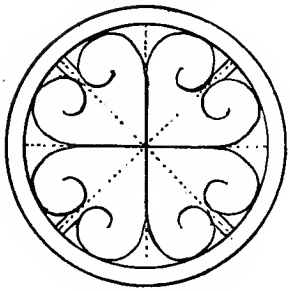


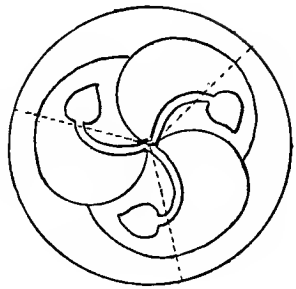


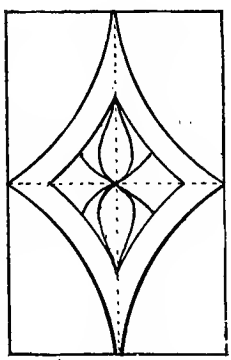


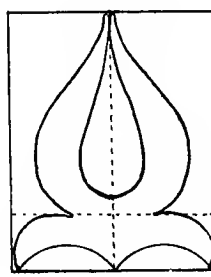


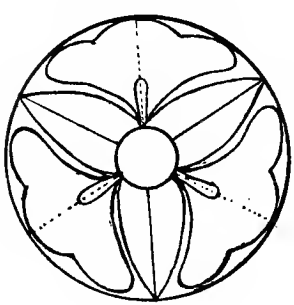
MEMORY DRAWINGS.

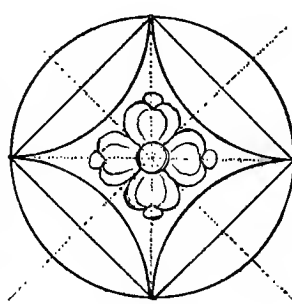


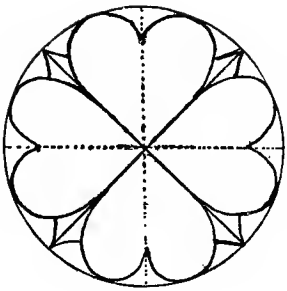


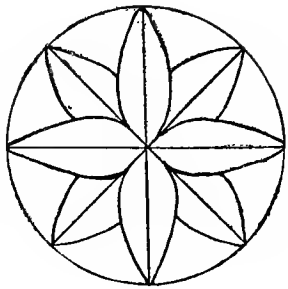


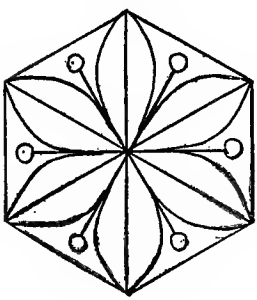


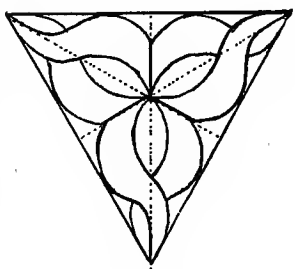


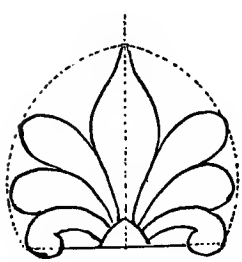


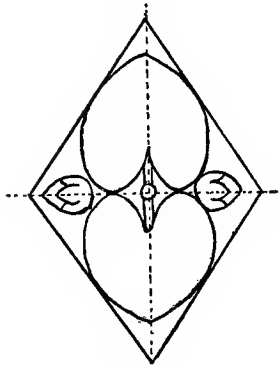


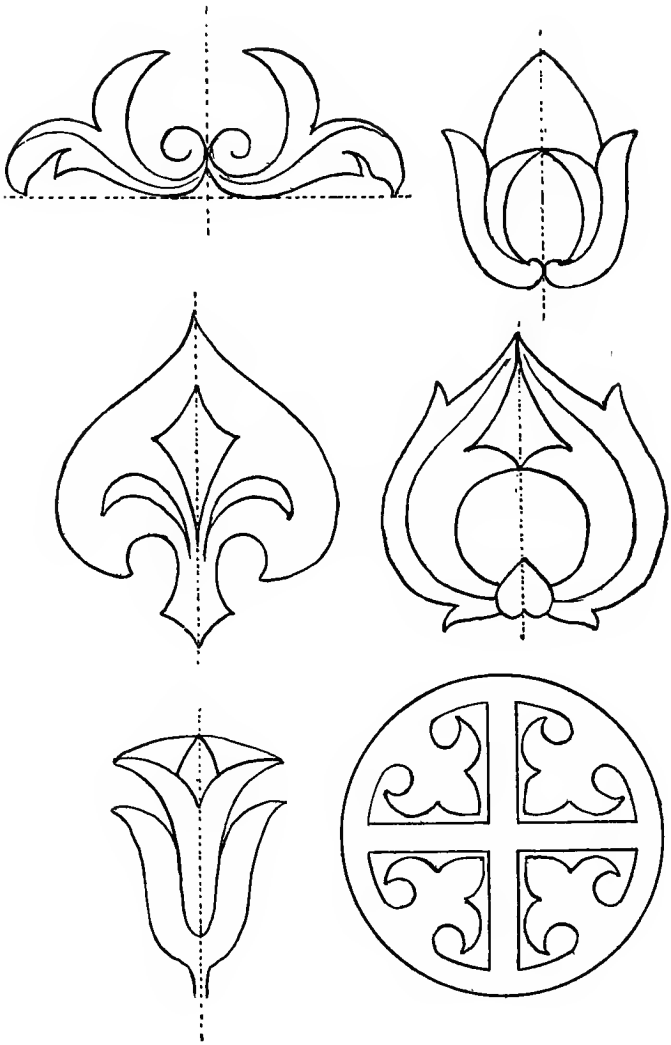




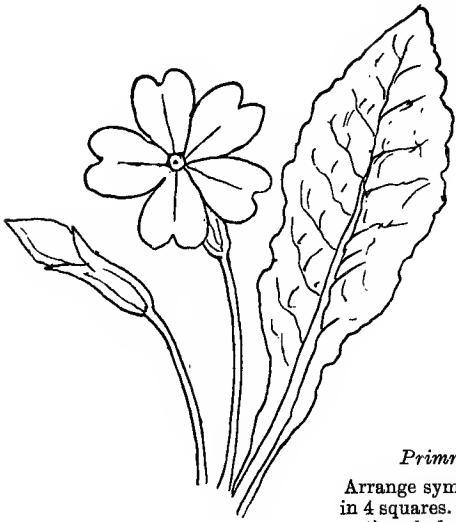






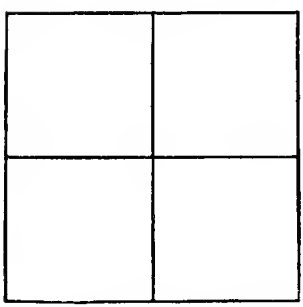


ADAPTATION TO GIVEN SPACES.

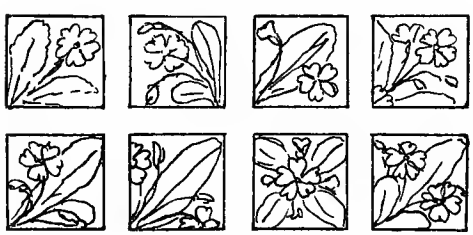


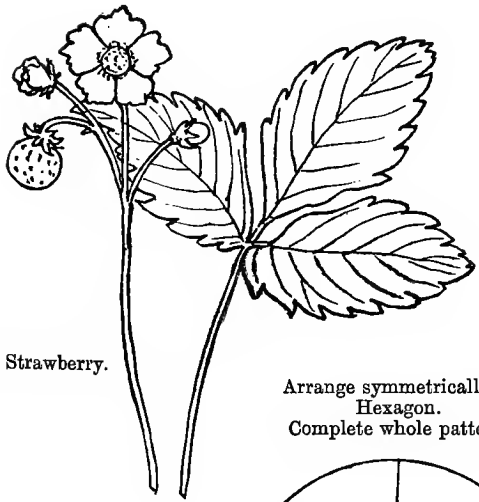
Primrose.

Arrange symmetrically in 4 squares. Complete the whole pattern.



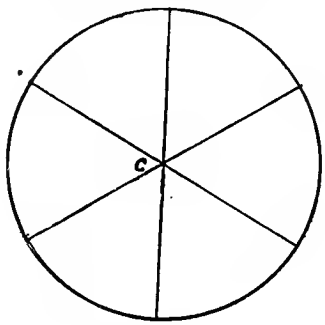
Suggestions of possible arrangements.

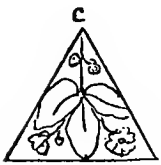




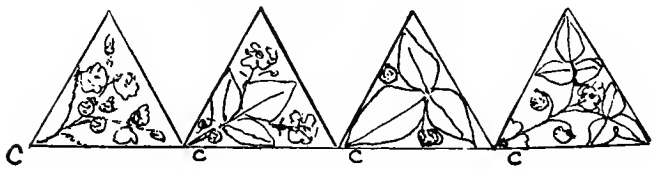
Wild Strawberry.

Arrange symmetrically in Hexagon.
Complete whole pattern.

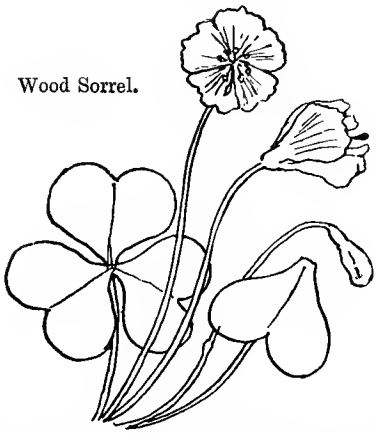




Suggestions of possible arrangements.

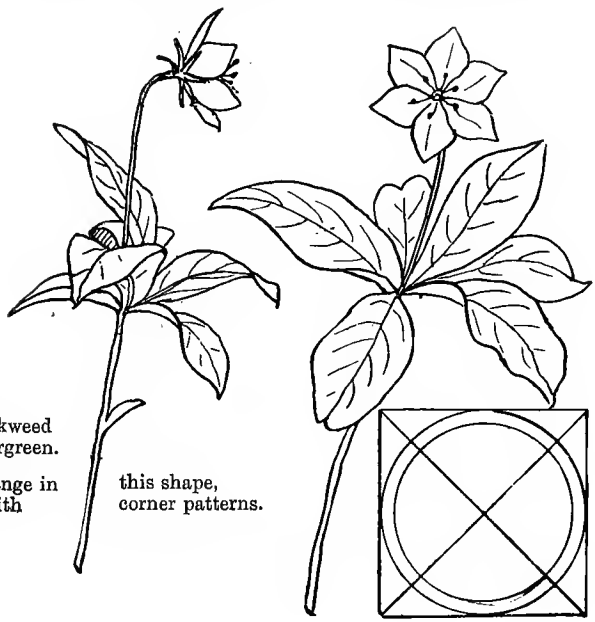


(*N.B.*—C means centre.)



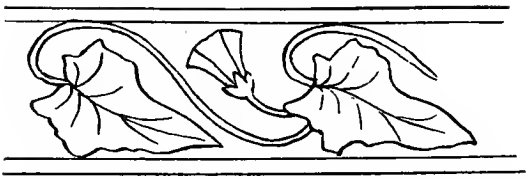
Wood Sorrel.

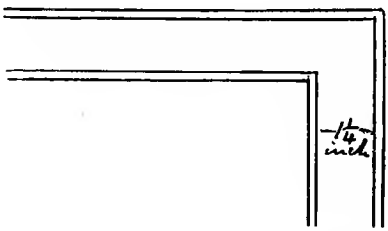
Arrange symmetrically in Circle, for top of a milking-stool.



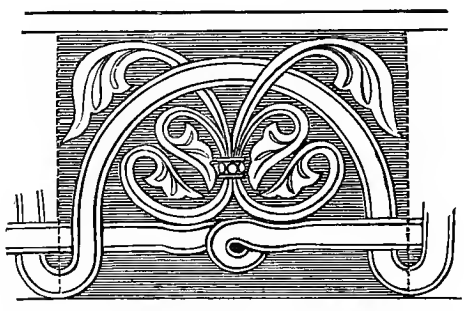
Chickweed
Wintergreen.

Arrange in this shape,
with corner patterns.

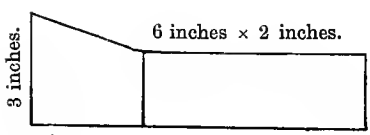


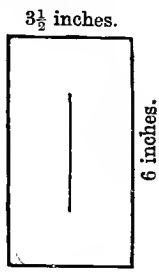


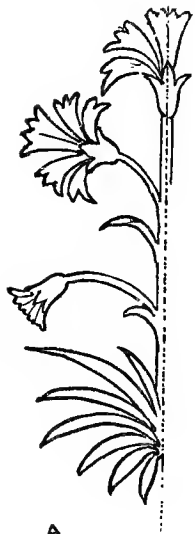
Adapt to frame, 6 inches × 4 inches; width 1½ inch. Draw a quarter of frame, with corner.



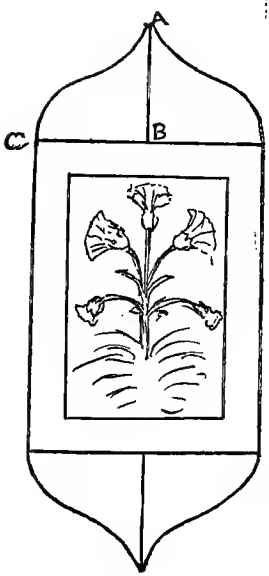
Adapt this pattern to letter box; size as below.

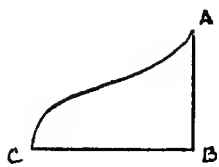


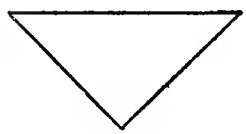




Adapt to the parts of corner cupboard, as below.







WOOD-CARVING.

HINTS ON CONDUCTING CLASS.

As good handbooks for carving are to be easily obtained, little need be said here about this part of our work.

Two such books are—

'Hints on Wood-Carving, Chip-Carving, and Recreative Classes for Beginners.' By Eleanor Rowe. School of Art Wood-Carving, Exhibition Road, South Kensington, London. Price 1*s*.

'A Manual of Wood-Carving.' By C. G. Leland, F.R.L.S., M.A. Whitaker and Co., Paternoster Row. Published at 5*s*.

When carving was started in our class I told each pupil that he must have 6 tools, for which 5*s*. would be required, but might be paid by degrees, the tools being used at once. In every case the intending carvers paid the 5*s*. at once. After that they continued to bring 9*d*. from time to time for a new tool. Out of the fund kindly subscribed by friends for the class I then gave to each carver the following :—

1 sheet of carbon paper, 2*d*.
2 iron cramps at 1*s*. 3*d*. or 1*s*. 9*d*. each.
1 strop, 1*s*.
1 or 2 stones for sharpening, 1*s*. to 1*s*. 6*d*. each.

The first 6 squares of wood were given to them. After that they paid for them.

6-in. squares of deal at 2*d*. each.
6½-in. ,, ,, 2½*d*. or 3*d*. each.
13 × 5 in. oblongs of deal or bass at 3*d*. each.
6½-in. squares of walnut or oak at 5*d*.

I got the wood in considerable quantities from a timber merchant, or dealer in wood, and had it ready cut into sizes and planed. It could then be sold at the above prices.

Wherever possible I should strongly advise *not* beginning with Chip-Carving. The pupil who learns first to do bolder carving, and who can ground out neatly, can easily learn Chip-Carving; but one who begins with this will find the bolder and larger carving quite a different art. The great inducement to beginning with Chip-Carving is that it needs few tools. But the patterns need great neatness in putting on the wood, as well as in carving, and are usually very small; and the more intricate patterns need great geometrical nicety and precision, which is often difficult for even skilled hands to attain to.

The teacher must of course have made himself a carver before he begins to teach it, and must also keep up his practice of it, and keep his hand in and enlarge his experience, else he cannot guide his pupils.

I should advise the teacher to let his pupils begin by grounding out, and to allow no punching till they can cut a fairly even ground. Punching has a pleasing way of concealing unevennesses and careless grounding, which makes it specially fascinating to the beginner.

Every pupil should learn to sharpen his own tools. No one can carve well without this; and girl carvers especially are very apt to neglect this business, and get others to do it for them. This is a lazy and unworkmanlike habit, and to be entirely discouraged.

All tools are to be had from George Buck, 242 Tottenham Court Road, London, W.; also stones, strops, and clamps. Penny handles are quite good enough, but should be specified, else 2*d.* ones are put. They reduce the price of all tools to 9*d.*, except V's, which are 1*s.* 2*d.* The teacher should, if possible, keep a variety of tools in stock, from which the pupils can choose. These can also be lent, at the lesson, where different ones are needed for any special piece of work.

A few elementary patterns for carving are subjoined at pp. 102–106. Others can be purchased from the School

of Art Wood-Carving, South Kensington, London, S.W. (the first on p. 102 is one of these), or from the Home Arts and Industries Association, Albert Hall, S.W.; and a teacher alive to the wants of his class can pick up suitable patterns in all sorts of unexpected places, and apply and adapt them.

The matter of patterns is the one which needs the most care and attention of anything, as it is one on which few of the learners (especially in the country) have any ideas at all; and it is very important to train the taste to accept none but good and suitable patterns for their work.

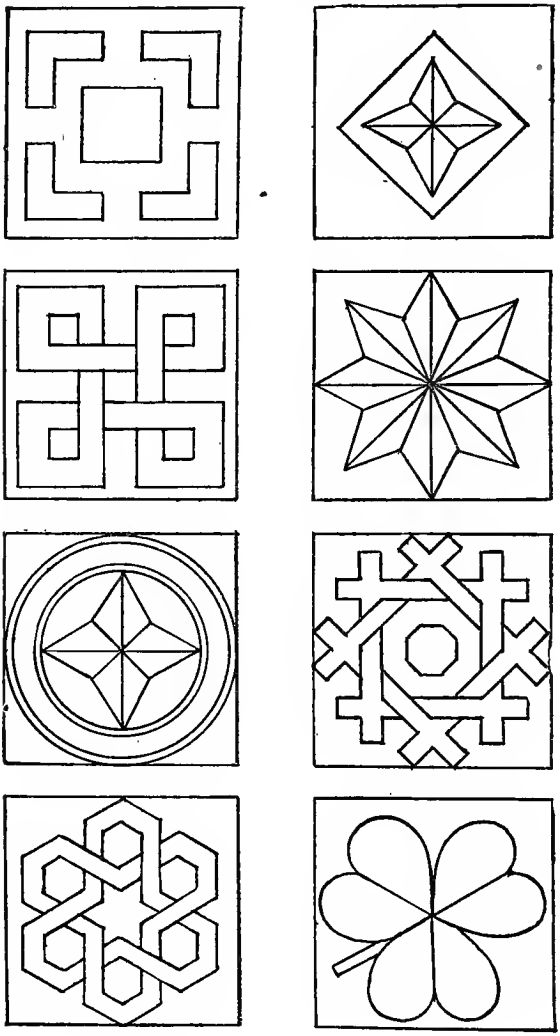
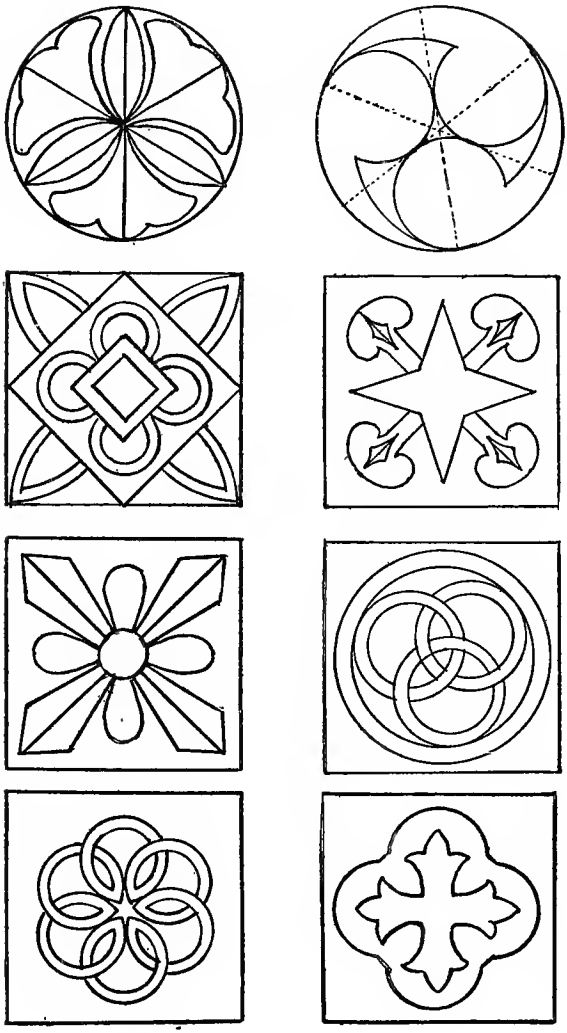
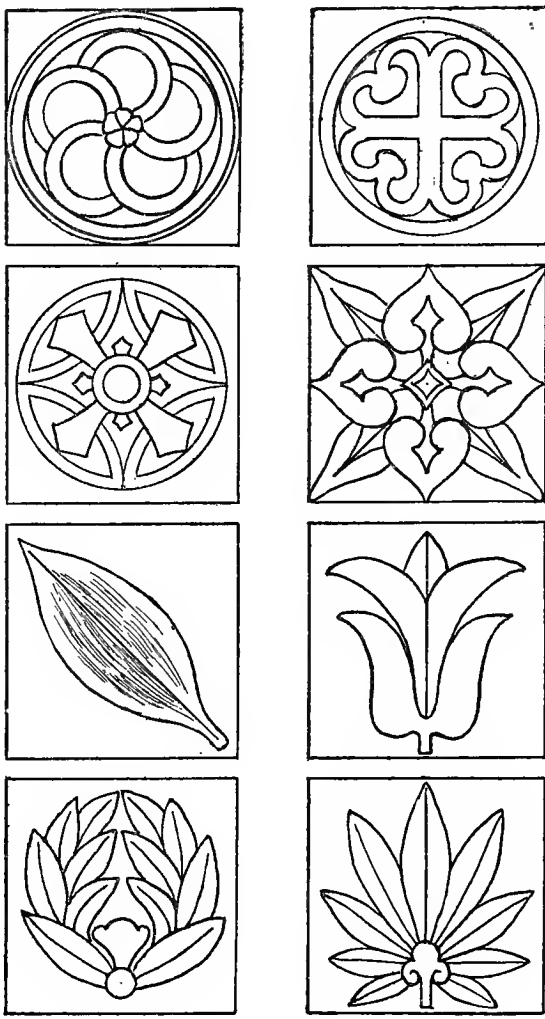
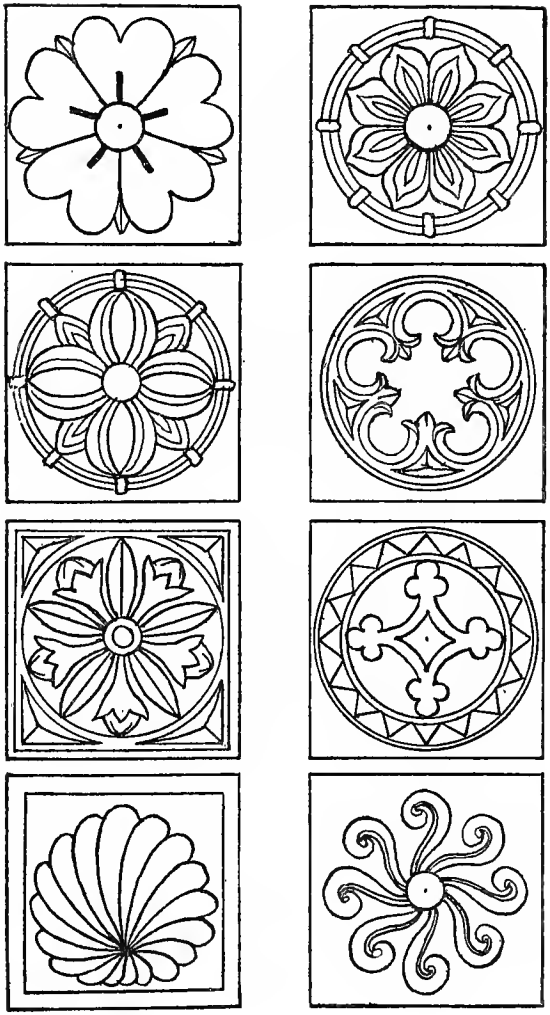
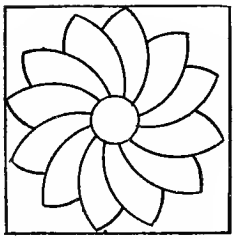
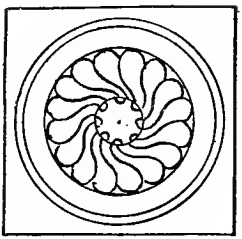
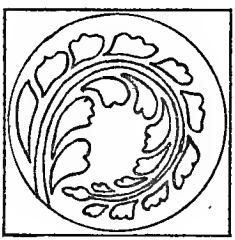
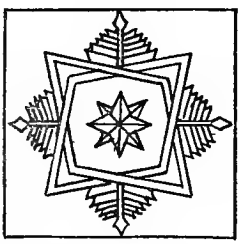
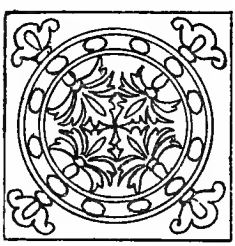
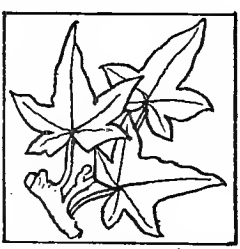
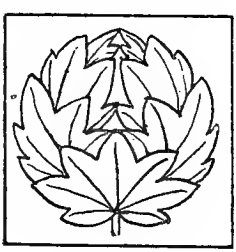
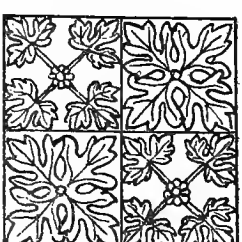
It is very advisable that the beginners should have squares already carved given to them as patterns; when they have got over the first difficulties, and can produce a fairly smooth and correct copy of a carved square, it will be time enough for them to learn to interpret the unadorned outline into the carved pattern. The teacher had better carve some of the simple patterns himself, as specimens to be used as copies, and lend them out.

Some of my carvers have learned to do excellent work. Many orders have been given for carved articles; and the orders when executed have always given great satisfaction. The work of the long winter afternoons and evenings thus supplies a little pocket money, as well as an immense deal of delightful employment; and a brisk and interesting correspondence about the patterns, the wood, the articles to carve, and the mode of work is the pleasant result. The carving also supplies a subject of common interest among the villagers; and great admiration is given to the work by relations and friends. Many of the pupils have taught their friends, and written for tools to be sent for them.

During the winter all materials belonging to the drawing and the carving are left in charge of the post-mistress, at the village post office and shop where she kindly acts as saleswoman of these articles. The pupils can borrow copies from her, both for drawing and carving, and change them when more are wanted.

Most of the carving pupils have become aware, as they grew clever in carving, that they needed more knowledge of drawing; and so, whilst pursuing their carving at home, and coming for advice and help to their teacher, gave their time at the lesson to improving themselves in drawing. It was for them that some of the more advanced teaching of drawing was given, and they found it very useful.

Some of the squares, when neatly carved, make very nice little stands for lamps or vases, especially with little feet added, and when a slight polish is given, according to one of Miss Rowe's receipts. Walnut or oak squares are best for this. Any turner will make little feet; and I have sold them for 2*d.* the set, including screws. An easy beginning is thus made at turning the carving to some use; and the stands make nice little presents. Other articles which have been carved are—

Bread platters.
Photograph frames.
Urn stands.
Tables.
Spinning-chairs.
Milking-stools.
Folding stools.
Small cabinets.
Medicine cupboards.
Flower boxes (to hold flower-pots).
Book shelves.
Handles for bread knives.
Corner cupboards.
Key cupboards.
Book slides.
Squares for coal boxes.

ELEMENTARY CARVING PATTERNS.